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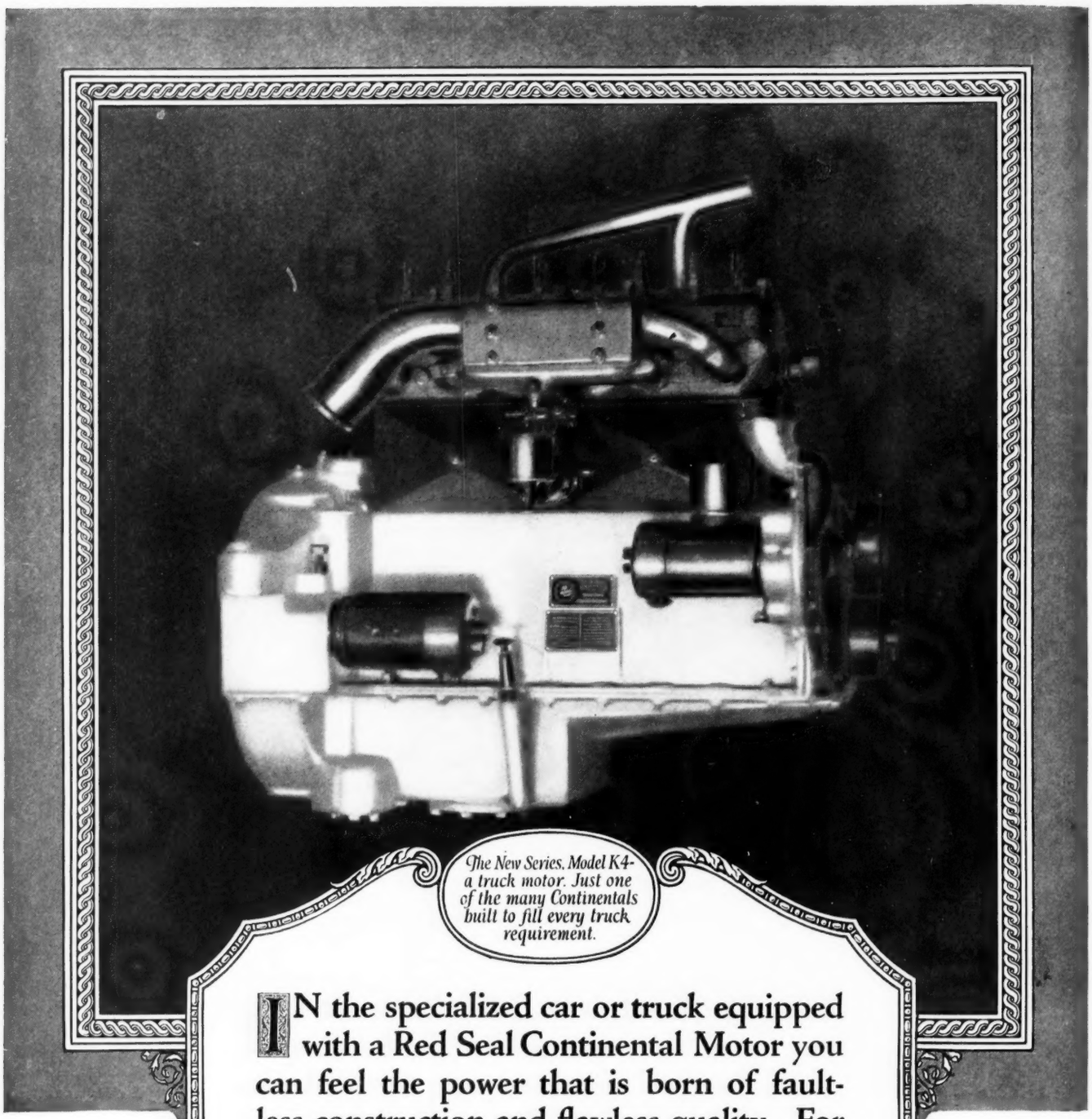

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AUTOMOTIVE INDUSTRIES
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VOL. XLVIII NEW YORK—THURSDAY, JUNE 21, 1923 No. 25

When Dealers Are Making Money Factories Profit

Manufacturer should encourage cultivation of after-market. Sound selling organization more important than regulating source of profit. Equipment sales an undeveloped revenue getter. Retailer turnover an expensive luxury for any factory.

By Ray W. Sherman

EVERY so often people suddenly exclaim that some important change or trend is taking place and the general conception seems to be that most of these things happen over night. As a matter of fact nothing of this kind can happen over night. It is always the result of years of development. A great change is not noticed by the majority in its early stages. Only when it becomes so apparent that it cannot escape notice is it recognized.

In recent months there has been apparent in the automotive industry several changes which have been years in the making and when they are more nearly complete we shall have a business that is as much better than that of today as today's is better than the business of several years ago.

It has been an entirely too common subject of conversation in this business that our retailers do not measure up to a very high business standard. It probably was a distinct shock to a great many people within the last few weeks when a large manufacturer of adding machines announced publicly that the largest user of his device was the retailer in the automotive industry. Not so many years ago, whenever a trade association convention was held almost anywhere in the country, there invariably would be in the audience at least one man dressed in a mechanic's shirt and with grimy hands. It is practically impossible to find a man answering that description in any automotive meeting held today. Even a meeting of shop and service station managers, many of whom have not progressed far above the rank of mechanic, dress like any other business men.

The entire industry has pulled itself up by its boot straps and is today on a level much higher than most of us realize.

A great deal of the conversation still heard about the small caliber and low rank of the business men in this industry is simply an echo of the conditions of former years. The change has not yet been fully realized. Many things have happened and will happen in this industrial development.

IN the early days of the industry the dealer was looked upon by the manufacturer as an outlet for the manufacturer's new automobiles. Coupled with this point of view were methods which did little to build the dealer as a strong, sound and substantial business man. The result was that most of the assistance given to the automotive merchant had to be given by himself; he got very little help from anybody else. Trade publications endeavored to present good methods to him, but pressure from the top of the industry often left him so little time that he did not become a student of himself.

There were certain abuses in the trade which were the basis of much criticism. There was the matter of the dealer's contract. Many manufacturers were of the belief that it was a subject it would be dangerous to bring up in meetings of manufacturers or meetings of dealers, because it was felt it would lead to open strife between two divisions of the industry.

After several years the issue was forced into the open, it was openly discussed and, to the great surprise of the entire industry, dealers and manufacturers found they were partners in the greatest business which our country has today.

Cooperation Makes for Better Business

THIS close relationship between the dealer and the manufacturer is bound to become closer. It must do so and the closer it becomes the better will be the business of both the dealer and the manufacturer.

The manufacturer can sell only as many automobiles as his dealers can sell and the dealers can sell only in proportion as they can make profits sufficient to keep themselves in business and become sound establishments in the communities where they are located.

If there is one important point on which the majority of car manufacturers probably still require a stronger conviction it is that the only good dealer for a factory is the dealer who actually makes money, regardless of what automotive commodity returns this profit. A dealer who sells new automobiles and comes to the end of the year with very little profit left is an insecure foundation under any factory. With the slightest adverse wind this particular part of the factory's foundation is likely to disappear entirely and then begins the expensive process of rebuilding the foundation of the manufacturer's business.

Statistics show that it costs today not less than $500 to get a new dealer. The complete expense of making a change is certainly much larger than that. If it costs a minimum of $500 to get a new dealer and several thousand to develop him properly can any manufacturer do anything more important than foster and cherish this expensive and necessary part of his business foundation?

"THERE has been a great deal of mass progress in the automotive industry, and because we are all in the same mass many of us haven't seen the progress, any more than the home town changes are appreciated by the man who stayed there. But we have gone on.

"As we have improved so we can improve more. Most of the improvements to date have been due to forward-thinking crystallized into action. A few good man-sized forward thoughts by the right people and we wouldn't have any problem of used cars, shop losses, dealer turnover or anything else to cause trouble."

How satisfactory it would be if a factory could have beneath it an organization of dealers, closely cemented together, all sound and substantial, all happy and prosperous, and all making money so that they would always be available to handle the output of the factory in such volume as economic conditions make possible.

All of this is leading up to the fact that the automotive merchant with his departmentalized business, is one of the necessities in the industry—and he is particularly necessary to the car manufacturer.

Whenever a dealer sells a new automobile, he has created an after-market. Out of this after-market can and generally does come more profit than comes out of the sale of the new car itself. The average dealer nets only about 4 per cent on new cars.

Why should the dealer, as has been the case to such a large extent during previous years, create this market and then deliberately push it from him and leave the profit of the after business to be taken by any one who cares to come along and reach out for it?

There are certain departments of a dealer's business which can produce for him a substantial revenue. The shops and service stations can be made to produce a profit if properly handled and if the dealer is given a sufficient amount of cooperation by those who are in position to give it to him. Quite a group of manufacturers have gone a long distance in developing practical flat rate systems.

Above all things, the dealer must arrive at the point where he ceases to lose money on his used cars, and where he actually makes a profit on them.

Only One Answer to Used Car Problem

AFTER all is said and done, there is only one answer to the used car problem and that answer is to be found in the establishment of the individual dealer, under his own roof. It is so elementary and simple a solution that it still is not recognized by most of the people in the business. It is entirely a matter of buying merchandise at such a price that it can be sold at a profit. There may be those who will think this is in the same class with the statement of the writer on the subject of making money in Wall Street. He said the way to make money in stocks is to buy them this week at one price and sell them next week at a profit. It sounds very easy. But that is the only answer. Local cooperation and other plans will help but the solution must be worked out by the individual dealer himself. Until he determines that he is going to solve the problem for himself, it never will be solved in connection with his own business establishment. Meantime the manufacturers of cars can do much to help the used car problem by harmonizing his production with economic conditions and working for a combination of both dealer and manufacturer profit.

In building money-making dealers probably the greatest undeveloped source of revenue in the business today is the automotive department. Yet there are those who say the dealer in cars must not sell accessories. They have not a true vision of the industry. There must come a recognition on the part of manufacturers of automobiles, trucks, parts, accessories, tires and supplies, that they are all parts—and very closely related parts—of a very large industry whose real business is supplying the public with transportation and allied service.

Accessory Sales Help Build Good-Will

NO business as large as the business in accessories and supplies could have grown into its present proportions unless there had been a reason for it. That side of the business really renders a service to the great car-owning public because it provides parts and supplies and other automotive commodities on short notice in thousands of localities where they could not otherwise be obtained. All this helps to build good-will for the automobile in the mind of the man who owns it. Anything which builds good-will among car owners is very definite value to the manufacturer of the automobile.

This great market is a fine profit possibility for every

automotive merchant who has contact with the car-owning public. Most of the merchandise sold in this field helps to give the motorist car satisfaction and he willingly pays a fair price for it.

There is in one of the large cities of the country a dealer in one of the highest-priced cars made who does a business in his service station of $200,000 a year in accessories and supplies on a stock investment of $25,000. This is giving him a gross profit that is nearly three times his stock investment and a net profit that is about 100 per cent a year on what is invested in stock.

Accessories Yield Large Profits

THERE probably is no other department in the entire automotive business that can yield so substantial a return and it is practically all a "found" business that otherwise would flow in and out the door of the service station and not be secured by anybody if this dealer did not make an effort to get it.

There are innumerable instances of this kind all the way up and down the scale from the dealer who has a $300 stock to a dealer who has a stock of $20,000 or $30,000. They all make a substantial and satisfactory profit on this class of trade and it makes them better dealers for the car manufacturer.

This business, in connection with a shop, can be developed to such proportions that many car dealers are able to weather a period of adversity without relying in any way on the sale of new automobiles, in case economic conditions make a slackening of car production necessary.

When a dealer is thus fortified with additional sources of revenue he remains in business and is all set to go when the market for cars returns. Methods of this kind help to decrease the mortality rate among dealers, tend to make it a more substantial business and help the industry as a whole.

Dealers Take to New Business

WHEN the Automotive Equipment Association began its campaign in 1921 to sell the idea to the trade that there were good profits to be made out of automotive equipment it was believed the idea would be first seized by the operators of garages and independent repairshops. This belief was founded on the fact that the independent repairshop and garage are more accustomed to dealing in a diversity of products and would be quickest to grasp the idea.

It was found, however, only a few months after the movement was started, that, because of the sane business principles involved in the propaganda, the idea was being most readily accepted by the dealers in automobiles, many of whom had until that time regarded themselves as essentially car dealers. Many had asserted that the sale of such small articles as accessories and supplies was beneath their notice. But when the facts of the situation were laid before them, the car dealer, being in most cases a fairly good business man with good business sense, adopted the idea. In a period of twenty months the number of adequate automotive equipment stocks in the industry increased from about 15,000 to considerably over 32,000 and most of this increase, it is safe to estimate, was among dealers in automobiles. This change has helped to build a more solid foundation under the industry.

The whole subject is related also to that of "pirate" parts. There actually is such a thing as a "pirate" part and the real "pirate" part maker is not a part of real modern business. On the other hand, probably a majority of those manufacturers of automotive equipment in its various forms who are regarded by some one as "pirate" parts manufacturers are really rendering a distinct service to those same individuals who consider them "pirates."

A closer relationship between the various divisions of the industry, a better understanding by all of us of what everyone else is endeavoring to do and where we all sit in—and this applies to dealers, repairmen, garagemen and manufacturers of cars, trucks, accessories and everything else—will serve to cement all of these parts together into a closely knit fabric and when that time has come all those who are a part of that fabric will profit greatly thereby.

"THE manufacturer can sell only as many automobiles as his dealers can sell and the dealers can sell only in proportion as they can make profits sufficient to keep themselves in business and become sound establishments in the communities where they are located.

"If there is one important point on which the majority of car manufacturers probably still require a stronger conviction it is that the only good dealer for a factory is the dealer who actually makes money, regardless of what automotive commodity returns this profit."

There has been a great deal of mass progress in the automotive industry, and because we are all in the mass many of us haven't seen the progress, any more than the home town changes are appreciated by the man who stayed there. But we have gone on. Not so long ago, in the Summer Merchandising Number of Motor World, was a two-page layout of faces that was a wonderful inspiration. It was a group gathered from many cities, each man a sound, substantial, successful business man—and he looked it—who had made his money in the automotive business.

When a prophet of yesterday carps about the poor class of people in this business ask him to recollect that we started yesterday with engineering principles that were laughed at, with roads that were only country lanes, with old-fashioned steel that any smith could master, with barns and livery stables for our business places, with an utter lack of method as to business, engineering, design or manufacture, with merchants who were but salesmen and mechanics and with a public some of which couldn't drive an intelligent horse.

Improvements Due to Forward Thinking

WE started with that, and we made our engineering principles the wonder of the world, we rebuilt the country's roads, we created steel that had never been dreamed of, we created a new style of architecture and took the cities' finest streets for our business locations, we became leaders in engineering, design and manufacture, we put a complicated machine into the hands of an unskilled public and made it operate with satisfaction, we set a nation on wheels with every man his own engineer and replaced the mile-post with the minute hand.

As we have improved so we can improve more. Most of the improvements to date have been due to forward-thinking crystallized into action. A few good man-sized forward thoughts by the right people and we wouldn't have any problems of used cars, shop losses, dealer turnover or anything else to cause trouble.

Hoover Tells Automotive Exporters World Markets Are Theirs

Says American manufacturers can easily expand overseas sales. No need to fear competition since our production methods place us in strong position. Economic conditions improving in Europe. Increased manufacturing efficiency raises living standards here.

"THE chief value of exports is to pay for imports and to help stabilize demand for domestic products," Herbert Hoover told a group of automotive export executives at an informal dinner held in New York on June 14.

Answering frankly the questions asked by exporters present, the Secretary of Commerce touched many vital topics, including the adverse trade balance, the gold surplus now in the United States, effect of the Fordney-McCumber tariff on foreign sales, possible results of the Transportation Conference, attitude of the government toward aviation, possibility of a Federal Reserve branch in Cuba, advisability of manufacturing branches in Germany, results of the Austrian loan, credit conditions in the Balkans, probable effect of revolutions on Chinese trade, and the value of Russian sales rights.

Hoover is optimistic, generally speaking, about business prospects at home and abroad. Stabilization of Europe is gradually progressing, regardless of all reports to the contrary, and conditions are immeasurably better than they were a year ago.

Conditions at home are healthy, he believes. Commerce and industry were proceeding at a dangerous pace in March, but banks and business men wisely applied the brakes and that danger is past. When labor is fully employed, he said, we are not far from prosperity. If we can maintain such continuous employment we need have no fear of any social or economic disturbance.

Reverting for a moment to prices, Hoover said his vision of business was one of stable prices, but that the world has had such a shock that the economic pendulum will swing back and forth for a good many years.

He believes that American automobile manufacturers will need larger foreign markets in the future as the rate of growth of domestic demand decreases. Great possibilities exist for automotive development throughout the world, he stated, since the number of persons per motor vehicle is very high outside of the United States.

Any Competition Can Be Met

American manufacturers should be able to sell a large percentage of the cars required to supply the individual transportation needs of the world. Our mass production methods are so far in advance of foreign manufacturing practice that our vehicles can meet any competition. These methods cannot be duplicated in other countries because they rest fundamentally on the tremendous domestic demand in the United States.

Low wage rates and lower standards of living in other nations are not sufficient to offset our production advantages. Competition in the future need be feared even less than at present, Hoover said, because wages and living standards undoubtedly have reached the lowest possible levels in most foreign lands. Standards cannot be reduced any further without taking food out of the workers' mouths.

He is not particularly concerned about the adverse trade balance this year. It is the result of our own prosperity, to a large degree. Strong demand has made it advisable and even necessary to make liberal purchases abroad of raw materials and finished products. It has been partly the result of our own increased efficiency, which has raised our standards of living. Every time our standards advance, for example, the demand for crude rubber is increased.

Gold Surplus Not Dangerous

A very heavy gold surplus now exists in the United States, Hoover continued, but there is no danger of business inflation because of that fact. Some European economists figure that this surplus will make credit easy in this country, with consequent over-expansion and inflation, resulting in high prices and decreased exports. Through this chain of economic events they expect to recapture export markets from the United States. Their reasoning is entirely sound, Hoover said, except for one vital point. America has not lost all of its business sense; it still has a few brains left. If we let this surplus gold flood the country inflation would result, but our Federal Reserve control of credit is such that nothing of this kind will occur.

It would not be undesirable, Hoover believes, to have a part of our gold surplus find its way into other countries. It would lend support to other currencies, and as money in other countries becomes stabilized trade difficulties will be lessened. He pointed out that the nationals of those countries which have seriously depreciated currencies are banking their surplus funds in the United States. Nothing is to be gained by investing it in goods or even real estate. Placing it in their own banks is a dangerous expedient, because the value may shrink still further. Europe also is hoarding American currency, he said, and our money is being exported at the rate of about $2,000,000 a week. These are factors militating against serious results from an adverse trade balance.

Hoover admitted that the Fordney-McCumber tariff might have some effect on automotive export trade, but made no definite statements along this line. He did advocate a bargaining clause in the tariff which would give wider scope for adjustments than does the present one. Changing conditions require different tariffs, he believes, and a tariff made this year may be disadvan-

"America Has Earned Its Automobiles"
—*Herbert Hoover*

THE American people have earned their automobiles.

There's no argument about it, in the opinion of Herbert Hoover. Increased efficiency has added the equivalent of at least 3,000,000 men to the productive forces of the country in the last decade. Standards of living have been increased accordingly and the motor vehicle has been one of the added standards.

Putting it another way, we could reproduce the standards to which we were accustomed ten years ago by working seven hours a day instead of eight. But the people have not been content with what was once considered an adequate degree of comfort. They have kept on working eight hours and have bought motor vehicles with the additional earnings. They are saving even more than they did so there has been no entrenchment on thrift.

Hoover voiced his views at the informal dinner given in his honor by the export committees of the automotive associations. They were brought out by the old question, "Do you consider there is any merit in the contention that the automobile is a luxury?"

There was no hesitancy about the answer. He emphatically does not. Ten or twelve years ago, he admitted, it might have been a luxury and probably was, but there has been such a startling change in living conditions that arguments which held true then possess no merit whatever now.

Increased industrial efficiency, Hoover contends, has been one of the most remarkable developments in America. It has been made possible by better manufacturing methods, elimination of waste in time and materials, wide use of machine tools, progressive assembly and many other improvements. Increased production at lower costs has meant an equivalent increase in wealth. This wealth has been distributed widely through higher wages and salaries and lower prices for finished products, especially motor cars.

Our living standards have risen more rapidly than those of any other nation as increased production efficiency has added to our wealth. The desire inherent in every person for individual transportation has resulted in the investment of a large part of that wealth in motor vehicles.

The population of the United States is 105,000,000 and Hoover estimates that the economic saturation point for automobiles will be about one for every three persons. That would mean about 35,000,000 on the present population basis, or three times as many as are now in use. With that many cars in operation the replacement market would require about twice as many as the industry can now turn out in a year.

Hoover asserted there was no need for repeating the familiar arguments which prove that the automobile is an economic necessity, but he cited one new point to show that it has played an important part in promoting increased efficiency.

He estimated that there are in the United States between 30,000 and 35,000 men who have a genius for the administration and direction of industry. The motor car has made these "Class A brains" mobile. Before its advent, one of these administrative wizards could direct only one plant because of physical limitations, but with an automobile it is now possible for him to assume the active direction of five or six. This in itself has been an important factor in increased production.

Hoover is an economist of the highest type but he has an intensely practical mind. He does not view with alarm the general use of articles which were altogether luxuries ten years ago or were luxuries for a large part of the population. The addition of these new commodities to the daily expenditures of the people has been made possible by better organized effort and that is what creates wealth.

The Secretary of Commerce has no fear about our ability to overcome by increased efficiency the so-called handicaps imposed by lower standards of living and the lower wage scales in other industrial countries. We have gone far in that direction by sheer efficiency and we will go still farther. As proof of his contention he cites the fact that we sell 85 per cent of all the automobiles which move in international trade although these cars are produced by workmen who receive three times the real wages paid to those in competing foreign plants.

Hoover has effectually spiked the guns of those who still carp about a "saturation point" for motor vehicles. There can be none so long as American standards remain at present levels. They will never sink lower and are likely to go much higher.

tageous six months later and require modifications.

A branch of the Federal Reserve Bank probably will be established in Cuba, Hoover stated. The chief purpose of this branch will be to maintain the use of United States currency in the island. Our currency has been subject to so much abuse in Cuba, he said, that the little Republic might establish its own currency if something were not done to remedy the present situation. This would be unfortunate from the standpoint of the United States, as great benefits accrue to American business from the use of our currency in Cuba.

The Secretary of Commerce is firm in his belief that American manufacturers have nothing to gain by establishing manufacturing branches in Germany. His chief objection to such branches lies in the probability of a heavy capital levy in Germany to help pay reparations. He thinks this levy is likely to exceed 50 per cent.

Austria is on the up-grade, Hoover thinks. The recent loan has had a stabilizing effect and Austria seems in a fair way to getting back on its feet. Governmental credit in Greece and the Balkans, on the other hand, is in a bad way. These governments had mortgaged everything they could lay their hands on to secure credit even before the World War. They were able to obtain money only on the best of security. Now such securities are wholly lacking. Many individual firms in the Balkan countries, however, are in excellent condition and offer good channels of distribution for American products.

Russia Offers Poor Sale Possibilities

A great change in our attitude toward governmental and individual credit has come about since the war, Hoover pointed out. Government securities used to be considered far better than those of individuals, but now individuals are much safer credit risks than are governments in most European nations.

Chinese revolutions do not affect Chinese trade to any material extent, the Secretary said. China has been used to political chaos of one kind or another for about 3000 years, so that uprisings disturb only those areas actually used as a battle ground. Merchants in Pekin, he pointed out, have been carrying on "business as usual" while fighting was going on only a few miles away. The farmer does not stop producing crops because of revolution and pursues the even tenor of his way unless an army actually marches through his wheat fields and destroys his grain. Consequently automotive business in China will not be affected materially by political disturbances unless trouble evolves that is more serious than anything the country has known in the past hundred years.

Sales rights in Russia aren't worth very much, to Hoover's way of thinking. He says that the Russian market for automobiles divides into four classes:

1. Agricultural population.
2. Proletariat or industrial population.
3. Intellectuals.
4. Soviet commissars.

With bread selling for ½ cent per pound, he said, the farmers aren't in a position to buy many automobiles. The industrial workers have no clothing to speak of and have a hard time getting food. They will buy clothes and many other things before they begin to think about including motor cars in their standard of living. The intellectuals are being kept alive largely by the efforts of foreign relief organizations.

That leaves the Bolshevik Commissars the only possible buyers of cars. These officials do use automobiles, but the entire consumption of vehicles in Russia for the next few years will be so small as to make sales rights worth very little.

Sales rights might be acquired from the present government, moreover, without any assurance of permanency. Taken all in all Hoover does not look upon Russia as an automotive market worth worrying about very much for some time to come.

Out of the Transportation Conference recently organized by the United States Chamber of Commerce at Hoover's request, the Secretary hopes to get some constructive plan for transport development in general and for railway development in particular upon which all parties concerned will agree. He is not so much concerned as to just what that plan shall be, so long as it is definite and progressive. He thinks anything better than letting the situation go by default. The only people who have offered real programs up to this time are the demagogues, he said.

Government Doing Nothing for Aviation

Economic conferences of this kind, Hoover believes, are bound to result in a constructive interchange of opinion, clarifying of positions, and a sounder basis of procedure for future developments. When they accomplish nothing more than this they mark a step in advance.

Answering the question, "What is the Government doing for commercial aviation?" Hoover replied tersely: "Nothing."

Then he went on to indicate the very great need of government assistance and regulation in the aeronautic industry and stated his belief that governmental cooperation is absolutely necessary. An aviation bill has been put through the Senate, he said, but thus far had not been passed by the House. He hopes that this bill may become a law during the next session of Congress. He foresees the day when the government will provide ports for airships just as it does for ocean vessels.

The informal gathering to which Hoover spoke was composed of about a hundred automotive executives particularly interested in the export field. The dinner was arranged by the Automotive Contact Committee cooperating with the Automotive Division of the Bureau of Foreign and Domestic Commerce. Guests present in addition to Hoover included J. Walter Drake, formerly chairman of the N. A. C. C. Foreign Trade Committee and recently appointed assistant secretary of commerce; Dr. Julius Klein, Director of the Bureau of Foreign and Domestic Commerce; Thomas R. Taylor, Assistant Director of the Bureau; M. H. Hoepli, Acting Chief of the Automotive Division.

Favorable Treaty with Spain

Drake spoke briefly of his experiences since going to Washington, while Klein gave the exporters some interesting information about current events in the export field, chief interest centering about the commercial treaty which is being negotiated with Spain.

Although Klein was guarded in his statements, he left the impression that the treaty, when finally adopted, probably would safeguard the advantageous treatment now accorded to many American lines, including automobiles. Klein also stated that the Bureau now has its own representatives in about twenty-eight foreign centers and that during the fiscal year which would begin in July this number would be increased to about forty.

Among the questions put to him was one which asked whether the Bureau intended to send an automotive commissioner to India to make special studies of that market. His reply was that the activities of the Bureau in India are being reorganized and that until this is completed a special commission could not be sent.

New London Bus Differs Materially from Previous Models

Lower floor and platform heights chief features of 1923 type. Pressed steel replaces flitch plates for frame. Three-speed gearset has been redesigned. Larger diameter brakes are used. Detachable top for winter use can be adjusted in ten minutes.

By M. W. Bourdon

THE London General Omnibus Co., which operates all except about 400 of London's 4200 buses, has just introduced a new type bus with characteristics of design differing as widely from its immediate predecessors as the latter differed from the pre-war pattern.

It will gradually displace existing types, and already the pre-war model—known as the B type and having the driver in the normal position behind the engine—is fast disappearing from the streets. The present output of the new type is 50 complete buses a week and is likely to be absorbed in London services for many months to come.

In having the driver alongside the engine hood, the new model resembles the post-war types K (1919) and S (1921). It has the same engine (four cylinders, 4¼ x 5½) as the S type chassis, which has been described in detail in AUTOMOTIVE INDUSTRIES. But behind the engine there is no resemblance to the previous models.

In the first place, the frame is of pressed steel instead of reinforced flitch plates, though the latter have been abandoned from necessity rather than choice, the compulsion being realized when the outline of the new frame is noted from an inspection of the accompanying elevational diagram.

The side members of the frame, it will be seen, drop abruptly in alignment with the rear end of the engine. In front of this point they are at the same height from the ground as the preceding types; but rearward they run at a height allowing a floor level in the body of approximately 24 in. until they arch sharply over the rear axle, then falling to a level giving a rear platform 13 in. above the ground.

To secure the low floor and platform heights permitted by this frame design it has been necessary to keep down the overall height of the rear axle. Previous L. G. O. C. buses have had direct underworm drives, but the necessary diameter of the worm wheel in a direct reduction of approximately 9 to 1, and the size of the axle center inclosing it, has resulted in an indirect drive being adopted. The total reduction is about the same but the worm gearing is supplemented by internal gearing on the rear wheels.

Unfortunately for the purpose of describing this new chassis the L. G. O. C. has placed an embargo on the publication of all but general features. In explanation of this it should be said that this leading London bus company is for the first time threatened by almost innumerable competitors. Apart from the two or three bus undertakings which have owned between them 250 or so vehicles but which have had working agreements with the L. G. O. C., the latter has of late years had no competitors. But during the past twelve months something like 50 small concerns have entered the field; they have selected the best-paying routes and are working these according to the best time of day to secure full loads. In a way it is an unfair kind of competition, one in which the public interest is not considered; the L. G. O. C. is left to "make" traffic by exploiting new routes and the opposition steps in only where the "plums" are to be found.

New Design to Meet Competition

One of the main reasons for introducing the new model is to meet this competition by offering a more convenient bus to the public. Features designed for comfort include the lower platform and floor levels and provision for fitting a covered top deck in winter that will comply with the requirements of the licensing authorities in respect of the overall height and center of gravity.

The design adopted is one of eight that were tried out privately last year, and it embodies numerous features of detailed design which have turned the scale in making a success of the general scheme.

Besides the differences in frame and transmission already mentioned, the design of the three-speed gearset

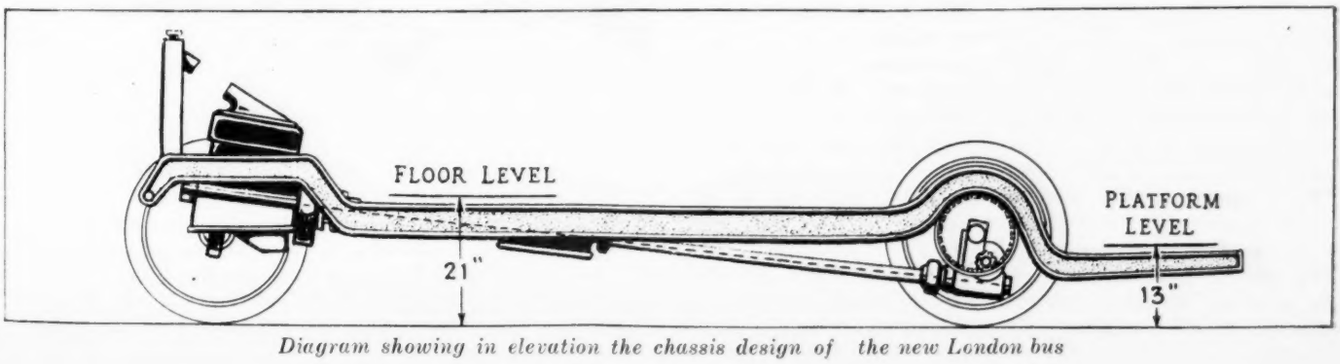


Diagram showing in elevation the chassis design of the new London bus

Left—New type London bus which is 12 in. nearer the ground than previous models. There is only one step from the road to the platform and one step to the interior. Right—A detachable roof has been designed for this new bus. It will be used only in winter months on a limited number of buses until public reaction to it has been determined. This top can be fitted or removed in ten minutes

has been entirely changed. Previous models have had inverted toothed ("silent") chains for the indirect ratios, but these have given place to a constant mesh helical gear arrangement with sliding dogs for engagement. The reason for the change was a liability for the so-called silent chains to become noisy. Difficulty was experienced, in fact, in getting them to run quietly enough even when new to satisfy the licensing authorities.

The clutch also has been radically altered. Instead of the dry single-plate pattern previously used, a multi-plate, Hele Shaw type, running in oil, has been adopted. In this case the change was made not because of any inherent defect in the single-plate design but on account of the impossibility of insuring that its springs would be kept equally adjusted; "shuddering" and "snatching" were often the result in practice, which are bad for the transmission and objected to by passengers. Hele Shaw clutches have, of course, a single spring, and while the grade of lubricant used in them is an important matter, this is a factor that can be definitely controlled without placing dependence upon the individual responsible in the garage for clutch maintenance.

As in the older models, the brakes are all located within drums attached to the rear wheels, but they are of much larger diameter—the drums are roughly 24 in. overall—for the shoes and drums are outside and concentric with the internal gear rings also attached to the wheels.

Gearset Silence Maintained

Obviously a transmission of the type outlined involves the use of a "solid" rear axle, so far as the main portion is concerned. The latter as viewed from the rear is seen to have a forged center of double-banjo pattern with extensions cranked upward to the further extensions for the wheel bearings. Within the center of the forged unit the differential and worm gear casing occurs with countershafts projecting on each side to carry the pinions of the internal gearing. The latter is entirely inclosed, runs in oil and is quite remarkable for its silence, which characteristic is secured by, among other means, a special system of adjustment for tooth engagement. So far as these new buses have run at present in normal service they have maintained their silence in transmission; they have kept just as quiet as the direct worm-drive K and S types.

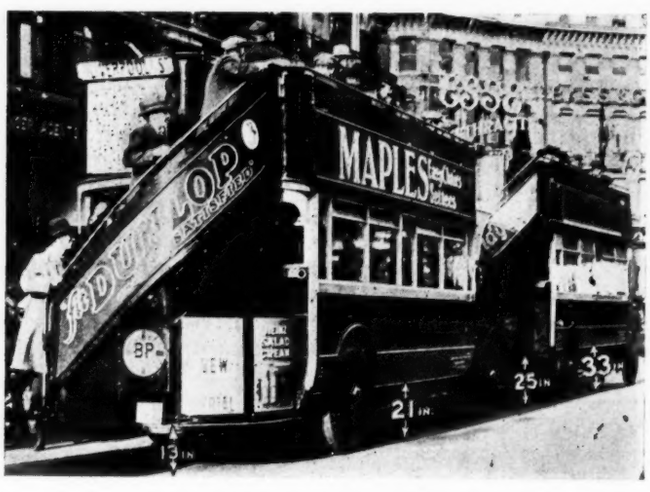
The wheel diameter, 1050 m.m., is the same as on the immediately preceding type. This reduces slightly the road clearance at the rear axle center on account of the difference in axle design, but it complies with practical and licensing requirements for city and urban services. Suspension is by semi-elliptic springs, those at the back being underhung, while at each end of both axles are rubber buffers which assist the main suspension in coping with loads beyond 50 per cent.

The wheelbase of the new bus is 6 in. longer than that of previous types, being 186 in. Additional length has not increased passenger capacity, for actually this model seats fewer people than the S type, 50 as against 54.

Smaller Capacity for Passengers

The loss of seats is due to two causes. In the first place the laden weight with 54 passengers, it is said, would exceed the maximum permitted in London. Even if the authorities allowed the excess the four extra seats would be uncomfortable for other than long-legged people, because of the pronounced encroachment of the wheel arches or paddle-boxing at the rear end of the body interior. A four-passenger longitudinal seat at each side at the rear end would have to be unduly high off the floor.

As the seating is arranged, there is a two-passenger seat running fore and aft on each side against the door, then occurs the exposed top of the wheel arches, and thence to the front end are five two-passenger transverse seats



Relative heights of the 1921 and 1923 type London buses are shown in this photograph. The new model is 12 inches lower at all points

on each side of a central gangway. This accounts for 24 passengers; the remaining 26 are accommodated outside in seven two-passenger seats on one side and six on the other side of the gangway.

The floor level of the interior is about 12 in. lower than

Four types of bus now in use by the London General Omnibus Co. B—Pre-war type with driver behind engine. Seats 34 passengers. K—1919 model, first type with driver alongside of engine. Seats 54 passengers. S—1921 type has longer wheelbase and larger wheels than previous models. Seats 54 passengers. N.S.—1923 type. Seats 50 passengers

that of earlier models, and the same reduction occurs in the overall height of the complete bus. As a result the licensing authority has approved of the use of a roof for the top deck. This is a detachable structure that can be fitted or removed in ten minutes with suitable tackle. It is self-contained with front and side windows, five of the latter on each side being slidable fore and aft.

At present the top cover is not in use and will not be put into service until next winter. It is admittedly an experiment, not in design, but in regard to the favor that the public will afford to it. Many London bus passengers are hardy people and have shown preference for the open top deck seats even in the worst of weather when they could have had room inside. The company is not at all sure that the inclosed top bus will be approved by the majority of passengers even in winter; they are going to put a limited number in service later on and then make a test of public opinion.

The normal body of this new model has several improvements in detail over the older patterns. Foremost among these is the single step up to the rear platform, which is divided off by a tubular pillar to separate passengers for inside and outside. From the platform is a step but 8 in. high to the interior, where the seats all have upholstered backs and removable cushions well sprung and with "plush" coverings. The seats are 34 in. wide, though the backs extend only 30 in. from the side of the body toward the gangway; the latter is therefore 22 in. wide above the cushion level, where there is but 14 in. between the seats. The knee room between the back of one transverse seat and the cushion of the next behind is 10 in., which means approximately 23 in. from seat back to seat back, the cushions being 13 in. across.

There are ten electric roof lights, the casings of these being of the marine type—recessed in the roof with hemispherical glasses. Two dynamos generate current for battery charging, these being located low down at each side of the front of the engine and are driven by separate belts.

The roof, which has a camber of 5 in., is supported by ten ash bows reinforced by steel plates; six of these rest at the ends on angle brackets located where the window frames occur. Four ventilating windows open inward above the main panels at each side, and two at the front behind the driver. On the top deck the thirteen two-passenger seats are also 34 in. wide, the curved seat boards being slatted for draining away water; the backs, also curved, are of ply-wood, 17 in. high and 31 in. wide, giving an effective gangway width of 20 in.

At the inner ends the seat boards are 13 in. above the floor level and 18 in. at the outer ends, the difference being accounted for by the 5 in. camber; from the top of the seats to the hand rail above the side boards the height is 21 in. A waterproof canvas apron is provided for each seat. The latter are slightly staggered, increasingly so toward the rear, and as a result there is rather more knee room for the passengers on the left-side seats than for those on the right side, where the six units occur in front of the staircase.

Czechoslovakia Offers Market for Low-Priced Cars

THE 15th Annual International Automobile Show held in Prague during the first week in May brought to light an active demand on the part of the motoring public for light cars. All of the manufacturers in Czechoslovakia have designed light models which attracted much interest. These four concerns in the order of their size are: Cesko Moravska Kohlben Company, Prague, using the trade name "Praga"; Laurin & Klement Company, Mlada Boleslav; Walter & Company, Prague, and the Nesseldorfer Wagenbau Fabrik, A.G., Nesseldorf, using the trade name "Tatra."

Only two American makes were exhibited. The leading European exhibits included the Citroen, with several light models, Fiat, Mercedes, Minerva, Graf & Stift, Austra-Daimler, and Bugatti.

In the motorcycle section there was a scooter, manufactured by A. S. Ferrum, under the name Near-A-Car.

The cheapest of these light local made cars, the 4-12 hp. produced by the Nesseldorfer Works is quoted retail at 39,600 crowns for the regular four seated touring car fully equipped. This is practically the same price at which a low priced American car is now selling in Czechoslovakia. Another American make 25-hp. model is retailing in Prague at 49,500 crowns. These prices include the 12 per cent luxury tax and 2 per cent turn-over tax. The light model Praga 5-18 hp. car is quoted at 58,000 crowns excluding luxury and turn-over taxes, while the Laurin & Klement light motel 7-20 hp. is listed 73,000 crowns excluding taxes.

The present import tax on automobiles is a great handicap to the sale of foreign cars, especially the low priced models which are not directly competitive with domestic cars, but even under present conditions a limited number of low priced cars can be sold and the market therefore justifies the serious consideration of American producers of this class of automobiles.

Novel Design of Chassis and Body Shown in Sekine Car

Unusual powerplant arrangement, driving at left rear wheel, light, unsprung weight, and simple, sectional body construction are features of new vehicle designed by an American engineer for Japanese company. Double transverse springs replace axles.

LIGHT unsprung weight, a novel powerplant arrangement driving at the left rear wheel, and a simple, sectional body are the outstanding features of the Sekine car recently designed by Austin M. Wolf, for the I. Sekine Co. of Japan. Double transverse springs replace the axles at both front and rear, the front pair being pivoted at the longitudinal centerline to form a three point suspension which practically eliminates twisting strains throughout the frame, making possible the use of light body members and sills.

Although the wheelbase is 108 in., the car as a whole creates the impression of greater length because of its low, parallel straight lines. The total weight of the touring car is 1950 lb. and is carried on 30 x 3½ tires which are set at the standard 56 in. tread. Considering the light weight and short wheelbase, the riding qualities and performance of this car are excellent. These qualities are obtained by some unconventional but very interesting design which seems to have worked out in practice.

MANY novel design features are incorporated in the Sekine car, described here. Although demands of the export field, particularly those of Japan, were considered primarily in designing this car, its unusual characteristics will be of great interest to American engineers. Plans are under way for selling the car in this country as well as in foreign markets.

The frame consists of light pressed steel side channels which are 5/32 in. thick, 3 in. deep throughout the center section and tapered off at both ends, the upper and lower flanges being 1⅜ in. wide. The side members are parallel at the rear end but taper toward each other from the point where they are swept up over the rear springs, forward to the front cross member.

Pressed channel cross members form the anchorage for both rear and front spring construction, the radiator also being carried on the front member. A lighter cross member with liberal gussets is placed at the forward end of the torque tube. The gussets carry the forward ends of the torque tube and radius rod. The design of the frame is noteworthy, because even after the body is mounted, no holes are drilled or punched in the flanges of the side members between the front and rear cross channels.

As the rear bevel gear combination is located at the left wheel, the axis of the unit power plant, coupling shaft and inclosed propeller shaft is swung around at an angle of about 17 deg. from the longitudinal axis of the chassis. The engine is of stock design with four cylinders of 3⅛ in. bore and 4 in. stroke and the usual carbureter and electrical equipment. The belt-driven fan is inclosed in a shroud at the back of the radiator to insure adequate cooling, although the fan is at an angle with relation to the radiator.

Cast Bracket Engine Supports

The engine is supported at either side of the bell housing by cast brackets which are bolted into the side channels and at the front by a vertical 5/32 in. thick plate, the ends of which are turned at an angle and also bolted into the side members. The center of mass of the engine is in the vertical plane of the longitudinal axis of the chassis. As this construction throws the transmission weight to the left of center, the battery is placed at the extreme right underneath the front floor board. The resultant weight on the front wheels varies by less than 10 lb. on either side.

Control of the car at the driver's seat is conventional in every respect, as the usual clutch and brake pedals are mounted on the bell housing and the standard gear shift and hand brake levers are found on the top of the trans-

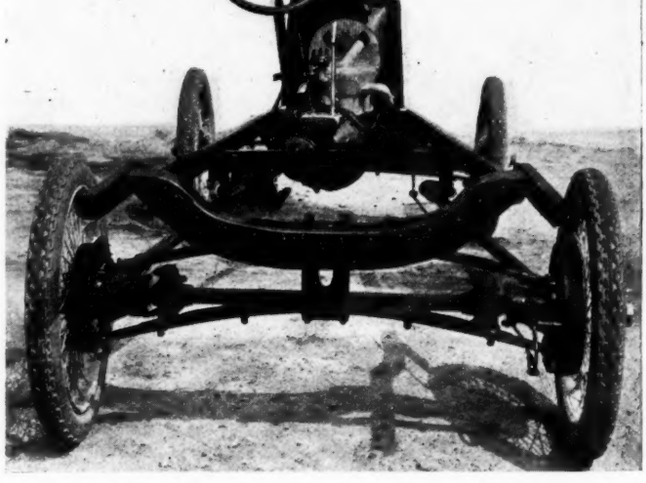


Fig. 3—Rear view of chassis showing rear spring and axle housing arrangement

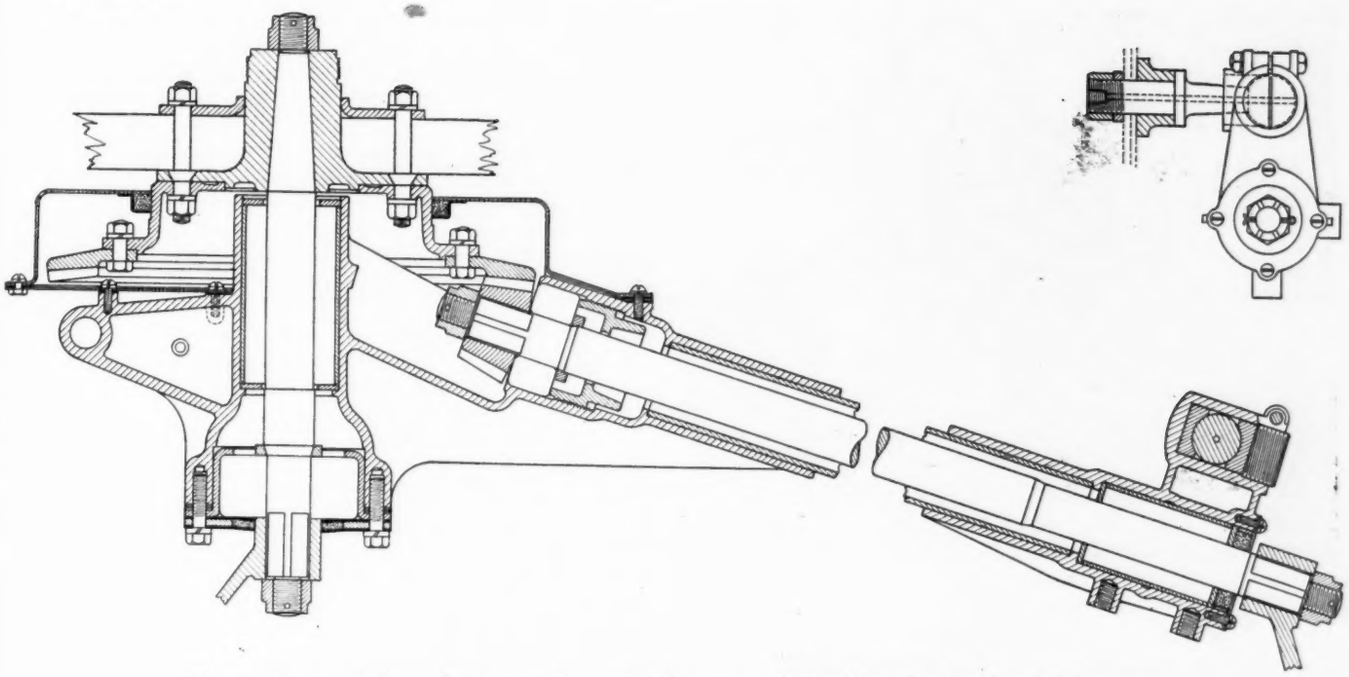


Fig. 1—Cross section of torque tube and left rear axle housing, showing bevel drive gears

mission case. The motion of the various levers parallels the axis of the power plant.

Inclosure of the bevel gears is completed by two pressed steel members which surround the combination and which are bolted to the cast housing. Grease is retained by a felt packing gland which bears on the outside of the cylindrical extension that carries the bevel gear.

Rotation of the left wheel is imparted to the right wheel by an intermediate tubular cross shaft which is connected to the inner ends of both axle shafts by fabric universal joints. The right axle, bearings and wheel hub are duplicates of those on the opposite side. A 14 in. internal expanding brake is mounted on the right side and is operated by the foot pedal through the usual linkage and a cross shaft which is carried on the center cross member. No intermediate axle construction or differential mechanism is used. The rear springs, of novel design, perform the function of the usual axle housing in determining the relation of the opposite wheels and the slight flexibility of the fabric universal joints at the ends of the cross shaft is utilized in place of the conventional differential.

Two parallel springs, 2 in. in width and 48½ in. long, between eyes, with an intermediate spacer casting are attached to the frame by means of two U-bolts which project through the rear cross channel with nuts and a bearing plate on top. Ends of the springs are mounted on bolts which are carried in saddles bolted to each of the cast wheel bearing housings. Wood bushings are pressed into the spring eyes and form the bearing on bolts of ¾ in. diameter. The spring bolts are mounted in forged saddles which are held above and below a rearward extension of the axle housing at either side by a through bolt and nut, locating the center of the spring 4½ in. back of the center of the rear wheels.

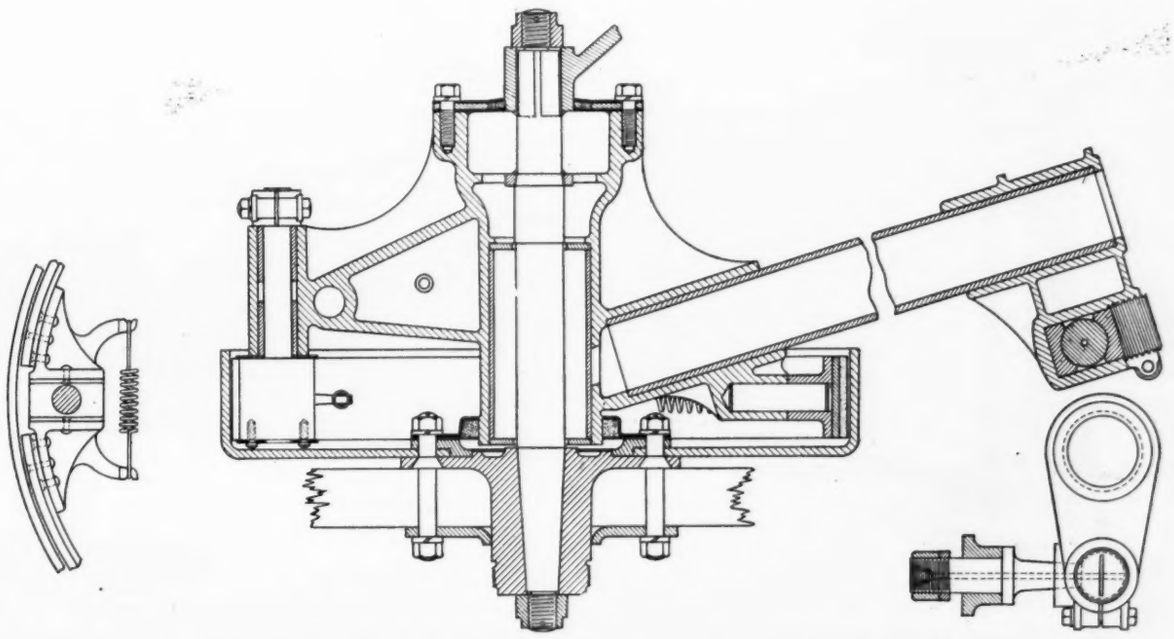


Fig. 2—Cross section of right rear axle housing and single rear wheel brake

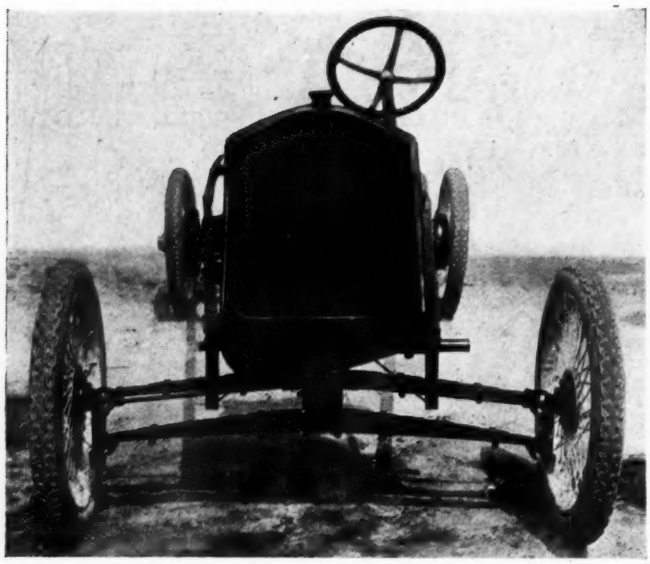


Fig. 4—Front axle construction with pivot at the center of the frame

In the rear, as well as in front, the lower spring has several more leaves than the upper. The springs in each pair have a slightly different initial camber before installation which tends to dampen vibration and rebound and makes for easy riding under various load conditions.

A contracting band brake, operated by a wedge arrangement from the hand lever, is placed at the rear end of the transmission case. The web of the brake drum forms the forward mounting for the fabric universal joint which transmits the drive to the tubular coupling shaft. A similar fabric joint is installed between the rear end of the coupling shaft and the forward end of the propeller shaft which is carried by a Hyatt roller bearing in the torque tube assembly. The torque tube also serves as a radius rod and in conjunction with the right radius rod transmits the motion of the rear wheels to the frame of the car. Both torque tube and radius rod are attached to the frame at their forward ends by spherical joints which are dependent from the gussets at the opposite ends of the center cross member, as illustrated by Figs. 1 and 2.

Drive is transmitted from the propeller shaft to the left rear wheel by a bevel gear combination of a 5 1/13 : 1 reduction. Instead of the usual axle housing, a wheel bearing housing forms the support and enclosure for these gears. The pinion is carried on the squared rear end of the propeller shaft just back of a two-row annular bearing which is mounted in the cast portion of the housing. The bevel gear is mounted on a flanged cylindrical extension from the wheel which is in turn mounted on a tapered extension of the axle shaft. This shaft is mounted in two annular bearings which are fitted into a cylindrical hub in the cast housing, one of these bearings being of the two-row type to take the end thrust of the axle. The bevel gear is of the straight tooth type and might be called an internal bevel gear as the pitch cone angle is approximately 97 deg. Straight side or rack type teeth are cut on the gear and the pinion teeth are cut conjugate to this form. A high reduction may be safely used with this combination, since the area of tooth contact as well as the number of overlapping teeth is high as compared to the usual straight tooth type, where the angle is less than 90 deg.

The wheels are restrained longitudinally by the torque tube and radius rod and laterally by the springs. It has been found that for 3 in. spring deflection, the lateral shift of the wheels is approximately ⅛ in., which results in angular movement of the radius rods of about 5 min. A slight clearance is allowed between the bosses of the spring bolt saddles and the sides of the springs to permit the fore and aft displacement of the wheels about the radius rod centers. The wheels are cambered at an angle of 2 deg. and show no visible tendency toward wabbling even on very rough highways.

Differential Eliminated

The absence of the differential is not apparent in the handling of the car and the single brake is very satisfactory from a driving standpoint. Some resistance due to the absence of the differential is encountered when starting the car on a wet or slippery pavement with the front wheels cramped in an extreme position. The general utility of the rear drive is demonstrated, however, by the fact that the rear tires of the fabric type on one of the experimental cars are in excellent condition after 6200 miles service. Braking action with either hand or foot

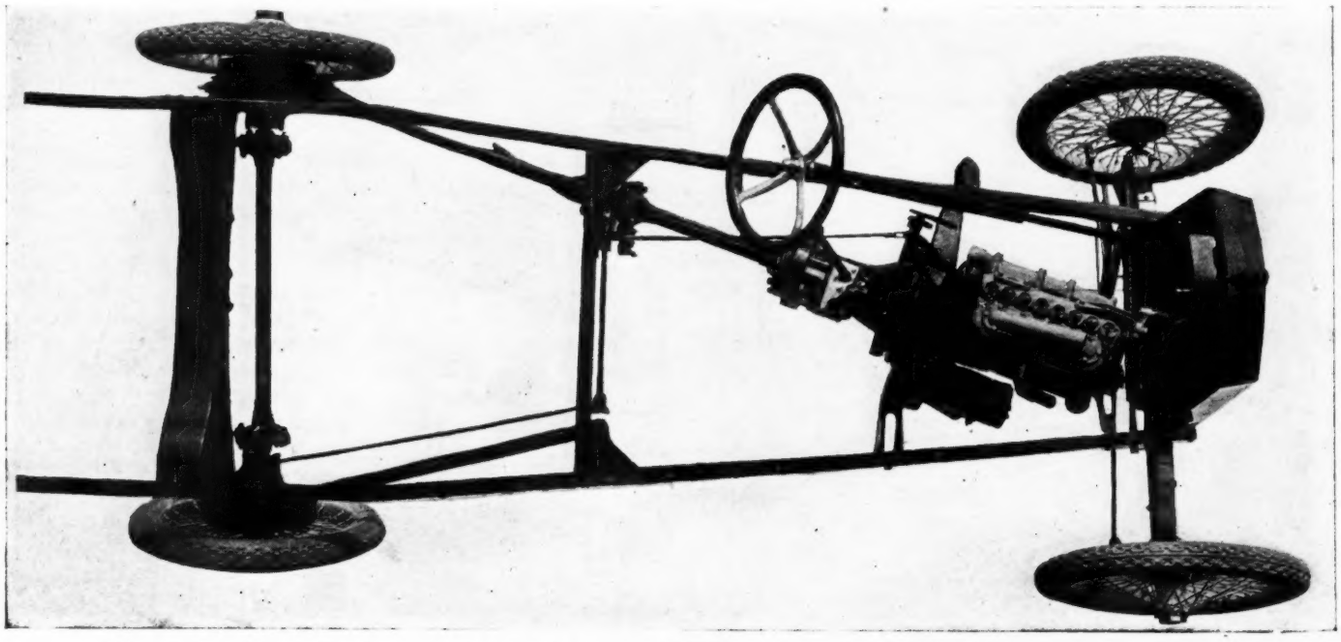


Fig. 5—Top view of Sekine chassis showing tapered frame and angular location of power plant with drive to left rear wheel

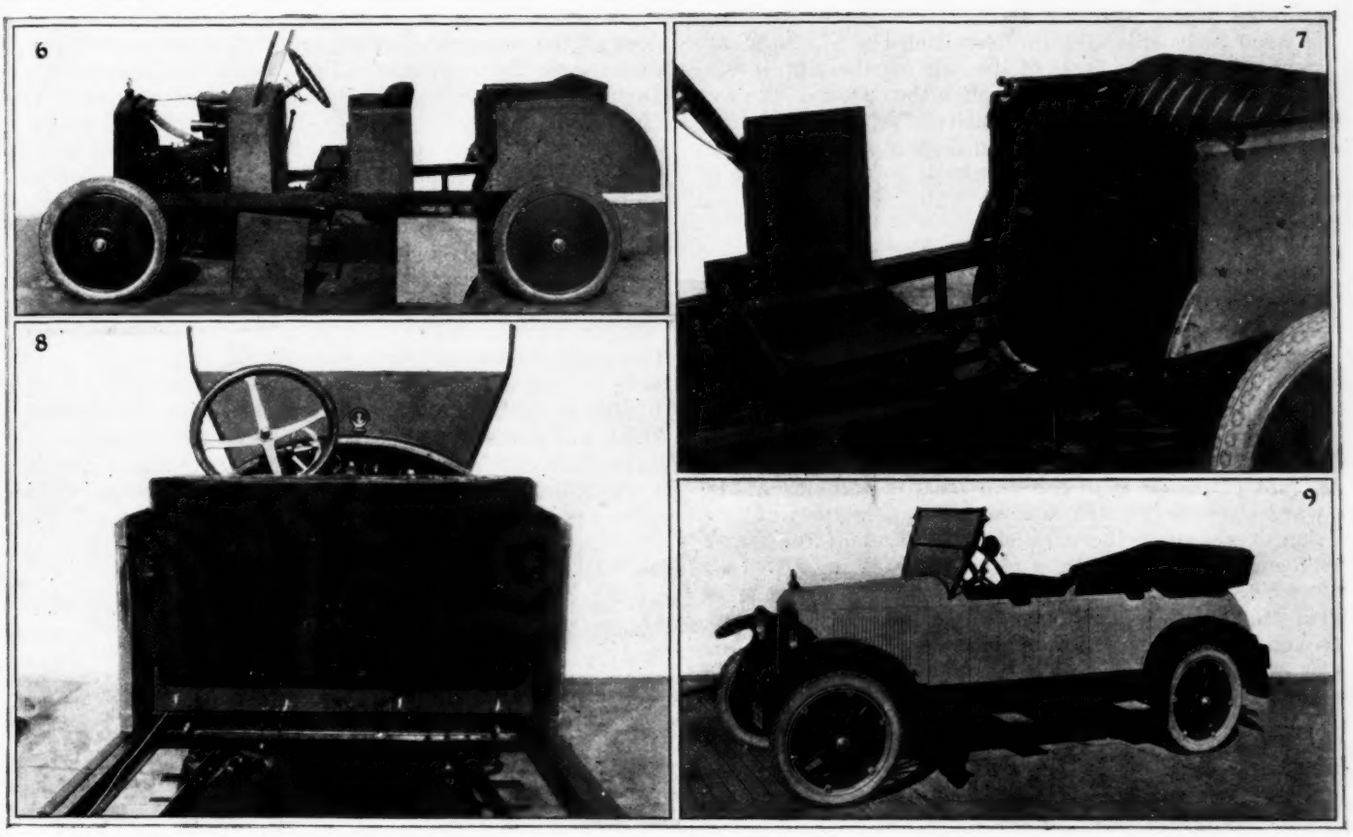


Fig. 6—Sectional components of the body in place. Fig. 7—Close-up view of the forward anchorage of the rear seat section with front seat base, left center panel and frame sills in place. Fig. 8—Close-up of the front seat base and center panel installation. Fig. 9—Finished Sekine five-passenger model showing clean lines resulting from sectional body construction

brake is very satisfactory with a noteworthy lack of skidding on very wet surfaces. The maker claims that an angular displacement of 8 to 10 degs. is obtained between the wheels in turning a corner, due to the flexibility of the fabric joints at the ends of the cross shaft, and that this action is a very workable substitute for the usual differential. This consideration is, of course, based upon the light weight of the car. The light unsprung weight combined with absence of the differential also entails less wheel rebound and consequent chafing of the tires upon resumption of contact with the road.

The front end construction is similar in principle to that of the rear except that the center spring support is mounted upon a trunnion and permits free oscillation of the entire axle structure. In this case, again, no spring shackle links are used, since the ends of the comparatively flat springs are carried on bushings and bolts that are duplicates of those at the rear. The bolts are mounted in lugs which are cast on the vertical steering knuckle barrel. The upper spring, as shown in Fig. 4, is in the horizontal plane of the wheel centers and therefore carries the greater share of the impact load. The springs are at present backed up by pressed steel bumpers mounted on the side channels but the maker intends to substitute a radius rod construction to eliminate the noise incidental to the present arrangement. Steering knuckles are of the inverted L-type with alternate steel and bronze washers at the bottom carrying the weight of the front end of the car.

Riding Qualities Unusually Good

Pivoting the axle at the center results in a cantilever action of the front springs when one wheel rides over an obstruction. As the length of effective spring action is doubled and the resultant travel of the frame halved because of the center trunnion support, the riding qualities are unusually good. In fact, no impact is felt at the seat when one front wheel passes over a six inch rectangular obstruction.

Steering is accomplished by an 18 in. wheel which may be adjusted to suit the individual driver. The lower end of the steering column is clamped over a short shaft which carries a small pinion meshing with a transverse rack which in turn carries a lever projecting downward at the center of the chassis. Both pinion and rack are enclosed in a cast case, the rack sliding in wood bushings at the ends of a transverse tubular extension which is also attached to the right side of the frame. Two ball studs are mounted on the lower end of the center lever and are connected by light drag links to similar balls on the ends of the steering levers attached to each knuckle.

Unique Body Construction

The ball studs on the center lever are 3 in. apart in the horizontal plane of the trunnion center and move but a short distance each way from center when the front wheels are at the maximum angle. As the springs are nearly flat, the error involved is slight and the drag links and springs therefore form two sides of a parallelogram, eliminating wheel wobble at any position. Due to the flatness of the springs, the transverse displacement of the front wheels is very slight and apparently has no effect on the life of the tires. As the front wheels are cambered 2 deg. and the projected centerline of the knuckle is close to the tread of the tire, the reaction on the steering wheel through the rack and pinion type of gear is very slight.

Light weight sectional body members are used to reinforce a frame of light section. As a result of the three point frame suspension and the consequent elimination of twisting strain, several unique features have been in-

corporated in the mounting and detail design of the body. The wood body sills, 3½ in. deep and 1⅛ in. thick, are fastened to the outer faces of the side members by several ¼ in. diameter bolts passing through the center of the web of the channel. The sills are entirely separate from the remainder of the body and extend from a point about 8 in. back of the center of the front wheels to the rear line of the rear door which is in line vertically with the rear end of the tapered section of the frame.

Pressed Steel Channels Form Windshield

The superstructure consisting of the cowl, two front doors, front seat base, front seat, center side panels, two rear doors and rear seat section which also contains the enclosed tire carrier and luggage compartment, is then mounted on the frame and sills in separate units. The sides of the body are flat, in a vertical plane, and extend in a straight line, flush with the outside of the sills, from the front of the dash to the rear ends of the sills at the forward edge of the rear seat section. The sides of this section overhang at the parallel outer faces of the frame side members by the width of the sills or 1⅛ in.

Two light pressed steel channels which form the wind shield frame pass diagonally down through the cowl section and are fastened to the forward upright post at the lower end. An eye bolt extending from that point through a clip held by a bolt passing through the center line of the side channel and the wood sill secures the front end of the cowl and forms a solid anchorage for the windshield. At the rear end, the cowl section is secured by steel clamps which extend under the upper leg of the side channel. The front seat base is fastened at the rear to the center cross member by four bolts through the top flange and at the front by the downward extension of the heel board being bolted at each side to the rear gussets of a built up battery box and step carrier. The front seat is adjustable longitudinally and is secured to the seat base by bolts.

Slotted brackets of pressed steel and bolts secure the center side panels to the front seat in the lateral direction. Steel tenons which are screwed to the lower wooden sill of the panels extend downward through grooves which are cut in the inner face of the body sills. These tenons are pulled down by pressed steel wedges and bolts under the lower flange of the side members and are finally secured by bolts passing through the frame sills, tenons, and side channels. The rear seat section is held on the frame by three bolts at each side. One bolt passes through the rear end of the side channel, another, through the rear cross member just inside of the side member, and the third, through a U-shaped strap at the end of the heel board, the center line of the web of the side member and a forged step bracket.

Piano Hinges Carry Front Doors

Piano hinges carry the front doors at the rear line of the cowl section and similar hinges are placed between the rear doors and the center panels. Bevel scuff plates, fastened to the frame sills, finish the bottom of the door openings. Simple snap locks are used on the doors. This type of construction with the light fittings and hinges could not be utilized on the light section frame if the three point suspension and reinforcing features were absent.

The whole theory of this body construction is, first, draw down the component parts by clamps or eye bolts without the necessity of holes through the flanges of the side members and, then, make a final, positive anchorage by bolts through the web of the side channels. These bolts in turn serve to anchor the wood sills and light steel side members together and further reinforce the frame.

An opening and hinged cover are located in the rear deck of the rear seat section and a steel pan is bolted up, underneath the overhanging deck, forming a luggage compartment and space for an enclosed tire carrier. The front floor boards lay on top of the side channels and are held down by quick action clamps. The rear floor boards rest on the lower flange of the side channels and are reinforced at the middle by a strip supported at the center cross channel and the heel board of the rear seat.

Steps are used instead of running boards, as their weight is somewhat less. The front pair are carried by extensions of the battery box support angles while the rear pair are carried by step irons from the side channels. The front fenders are each carried by irons bolted to the webs of the side channels and the rear pair are bolted directly to the rear seat section of the body. Dust guards which are fastened to the body sills complete the smooth appearance of the sides of the car. The rear of the car is particularly clean due to the complete enclosure of the spare tire.

Riding Qualities Unusual

While this design is, on the whole, rather unconventional, the performance of the car on the road is very pleasing. The riding qualities are unusual considering the wheelbase and weight. The great advantage of low unsprung weight is immediately apparent as there is a noticeable absence of rebound and pitching action. The body, in spite of its light construction and fittings, shows no tendency to squeak or chafe at the doors after 6000 miles of road work. The lack of the usual twisting is best demonstrated by the fact that the light piano-type door hinges are in excellent condition.

British Car Business Suffering

REPORTS to the Department of Commerce state that the motorcycle industry of Great Britain is enjoying better times. Heavier models are becoming more popular and are competing with light passenger cars. Manufacturers of light model motorcycles are also fairly busy. The cycle manufacturers have been able to reduce prices and certain types of machines are being offered at prewar quotations even though additional equipment has been added. The industry is better off than are many of the small car builders.

The passenger car industry, on the other hand, is suffering greatly from the effect of the £1 tax. The industry had expected that with the change in taxation to a basis of fuel consumption, which had been promised, a trend toward heavier cars would take place, and great disappointment was felt when this measure was not included in this year's budget. The organization and capitalization of British companies is not such as to permit manufacturers to produce one type of car for the home market and a distinctly different type for foreign fields.

The demand for heavier cars in the British market is more evident than ever in the import figures of the first quarter of 1923, which totaled 10,008 cars and chassis, as against 4830 for the same period of 1922. Imports of 2092 vehicles during March established a new high record for imports during any one month, the last record having been 2025 in January, 1923.

In view of these increasing imports, many British manufacturers are giving serious attention to the excellent methods employed by their American competitors, and the feeling seems to be growing stronger that some sort of an amalgamation of plants and capital must be effected before the motor industry can be placed on a firmer basis.

Firestone Price Cut Surprises Industry

QUITE unexpectedly, Harvey Firestone has announced a reduction of 10 per cent in the price of tires. Other makers have not stated whether they will meet the cut but it is generally expected they will. Thus the industry will go through another painful attack of cramps. Although the cost of crude rubber has eased somewhat, few people expected a price revision downward, especially at the beginning of the touring season.

The curve of tire prices has shown a downward trend almost continuously since 1913 and the cost to the consumer is now only about 70 per cent of what it was ten years ago. They dropped about 25 per cent in 1921 and then remained practically stationary until the middle of 1922 when there was another decline of about 10 per cent. Since then the trend had been steadily upward and they were back where they were near the middle of 1922 when Firestone made his announcement.

If the other makers meet the Firestone cut, as they probably will, it does not seem probable there can be further general decreases until there have been sharp declines in the cost of crude rubber and fabric. If there are, they will be the result of competitive rather than economic conditions.

There is small probability of cheaper cotton for a long time to come. The carry over from last year's crop will be negligible. The cotton acreage this year is only from 7 per cent to 10 per cent larger than last year and the crop forecast runs nearly 1,250,000 bales less than the estimated consumption in this country for the coming cotton year. With such conditions prevailing the cost of raw cotton is likely to go up rather than down.

No sharp drop in crude rubber is possible under the Stevenson plan, which controls shipments from the British dominions and practically fixes the price on a sliding scale. When demand is shortened and the price falls, the volume of shipments permitted shrinks automatically. For example, when the London price falls to 24 cents a pound, shipments are restricted to 55 per cent of the 1920 crop, which was 355,000 tons. The United States alone took 290,000 tons in 1922 and its requirements this year are not likely to be any less. On a 24 cent basis there would be available, however, only 195,000 tons. It can readily be seen, therefore, that unless there is a terrific shrinkage in the consumption of rubber in this country, the cost of crude can't get much lower.

Demand for tires certainly isn't going to be any smaller than it was last year. Doubtless it will be considerably larger although it may not be as large as tire manufacturers estimated. There have been reports from Akron of substantial overproduction but they have been denied. It probably is true that there are no more tires in storage than is usual at this season.

Henry Ford and Harvey Firestone are close friends. They think alike on a good many questions. Each is rather strongly inclined towards paddling his own canoe. Ford never has joined other manufacturers in the National Automobile Chamber of Commerce although his acquisition of the Lincoln company made him a member and he has not resigned. Firestone recently resigned from the Rubber Association of America, to which he had paid substantial dues for several years. Now he is the principal backer of a new association of tire manufacturers which is being organized.

Firestone was entirely out of sympathy with the stand taken by a majority of the members of the Rubber Association in relation to means for combatting the operations of the Stevenson plan. The majority favored negotiation and compromise but he wanted to fight with all the weapons available, including federal intervention against British governmental regulation. He is using all the influence at his command to hasten surveys of rubber growing possibilities in the Philippines and he proposes the formation of a company which will establish plantations there.

The N. A. C. C. has gone on record as strongly condemning the Stevenson plan on the ground that it limits shipments by legislation and is likely to create an arbitrary shortage because it does not recognize the law of supply and demand.

For one reason and another the tire industry has been in more or less turmoil for several months. In some quarters, Firestone's price cut is attributed in part to his differences of opinion with other tire makers in reference to the Stevenson plan, but this undoubtedly is unfair. He is too good a business man to cut off his nose to spite his face.

The fact remains that American consumers are dependent upon British producers for their rubber supply and will be for years to come unless prompt steps are taken to establish plantations in the Philippines, or in South America where rubber already is grown in a somewhat half-hearted way.

Whether there will be a shortage this year remains to be seen. The Rubber Division of the Department of Commerce is credited with the prediction that there will be a surplus of from 30,000 to 50,000 tons at the end of the year, but this contention is at least open to argument. Imports for the first four months were 120,921 tons as compared with 93,896 for the same period in 1922. This, together with relatively large imports last October and November, provided a fair margin of safety but it is doubtful whether there will be any very large carry-over.

In the meantime, the Stevenson plan still lives. If there is a surplus this year there may be an arbitrary shortage under it next year unless it is modified.

Correct Manifolding a Basic Problem of Vertical Eight

Carefully worked out design required to give uniform distribution of gases. Firing order closely inter-related. Use of more than two carbureters impractical commercially. Single exhaust manifold may be utilized if of sufficient size.

By P. M. Heldt

AMONG other problems that arise in connection with any new form of engine are those relating to the best firing order and manifolding, which are inter-related. If the manifolding is not well worked out the distribution is likely to be non-uniform, either quantitatively or qualitatively, or both. Proper quantitative distribution is obtained if each cylinder receives the same weight of charge per cycle as every other cylinder, while proper qualitative distribution is obtained if the fuel-air proportion of the charge is the same in all cylinders.

In a previous article, published in AUTOMOTIVE INDUSTRIES of April 12 last, it was shown that there are two designs of crankshaft for eight-cylinder vertical engines which give the best results as regards ease of manufacture, balance of reciprocating parts and even sequence of explosions. Sketches of these crankshafts are reproduced in Figs. 1 and 2. For each of the two designs there are eight possible firing orders, as follows:

Firing Orders for the Fig. 1 Type of Crankshaft

1—3—2—4—8—6—7—5
1—3—7—4—8—6—2—5
1—3—2—5—8—6—7—4
1—3—7—5—8—6—2—4
1—6—2—4—8—3—7—5
1—6—7—4—8—3—2—5
1—6—2—5—8—3—7—4
1—6—7—5—8—3—2—4

Firing Orders for the Fig. 2 Type of Crankshaft

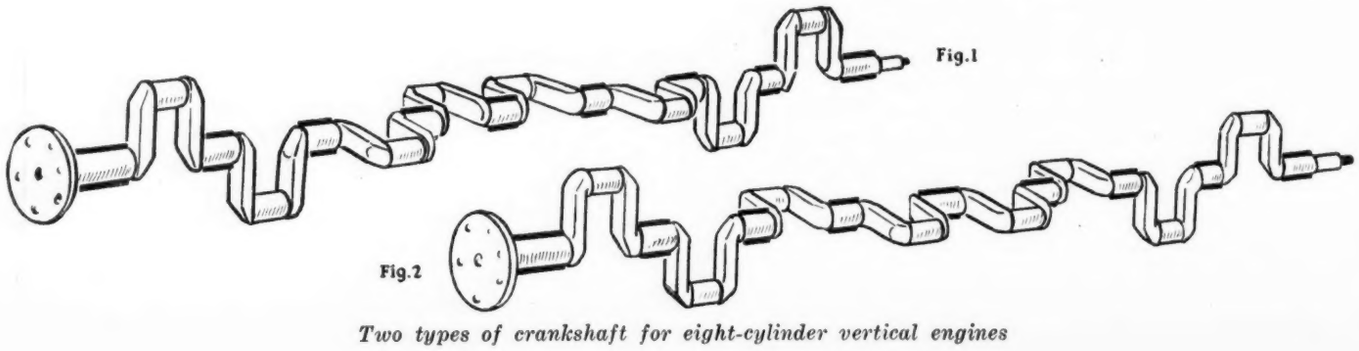
1—4—2—3—8—5—7—6
1—4—7—3—8—5—2—6
1—4—2—6—8—5—7—3
1—4—7—6—8—5—2—3
1—5—2—3—8—4—7—6
1—5—7—3—8—4—2—6
1—5—2—6—8—4—7—3
1—5—7—6—8—4—2—3

Admitting that the problem of manifolding a four-cylinder engine has been fully solved, one method of manifolding the eight-cylinder vertical engine would be to provide one header for the inlet ports of cylinders 1, 2, 3 and 4 and another for the ports of cylinders 5, 6, 7 and 8 and connecting these two headers by a Y to the lower branch of which the carbureter connects. Uniform distribution would be expected if the flow, as one inlet valve opens after another, always alternated from one branch of the Y to the other. But, unfortunately, with not a single one of the sixteen firing orders given above does this hold true.

So-called Loop Type Appears Best

If we take the firing order next to the last in the first table above, which comes nearest to meeting this desideratum, the flow alternates from one branch of the Y to the other as cylinder 6 follows 1, 2 follows 6 and 5 follows 2, but then cylinder 8 follows cylinder 5, which cylinders are both supplied through the same branch of the Y.

The best plan, in order to secure uniform distribution, would seem to be to use a so-called loop type of manifold, as shown in Fig. 3. In an eight-cylinder engine two cylinders are always drawing in charge at the same time, and for short periods at intervals of 90 deg. of crank motion even three cylinders are aspiring charge simultaneously. In the two branches of the manifold leading from the carbureter the flow will be continuous though slightly fluctuating. In the sections of the manifold between inlet ports the flow will reverse, but the total resistance to the flow from the carbureter to the inlet port will always be substantially the same, insuring equal quantitative distribution, and there is also no obvious reason why the qualitative distribution should not be as good as can be obtained with any form of manifolding. If that part of the manifold connecting the different inlet ports is cast in the cylinder block,



Two types of crankshaft for eight-cylinder vertical engines

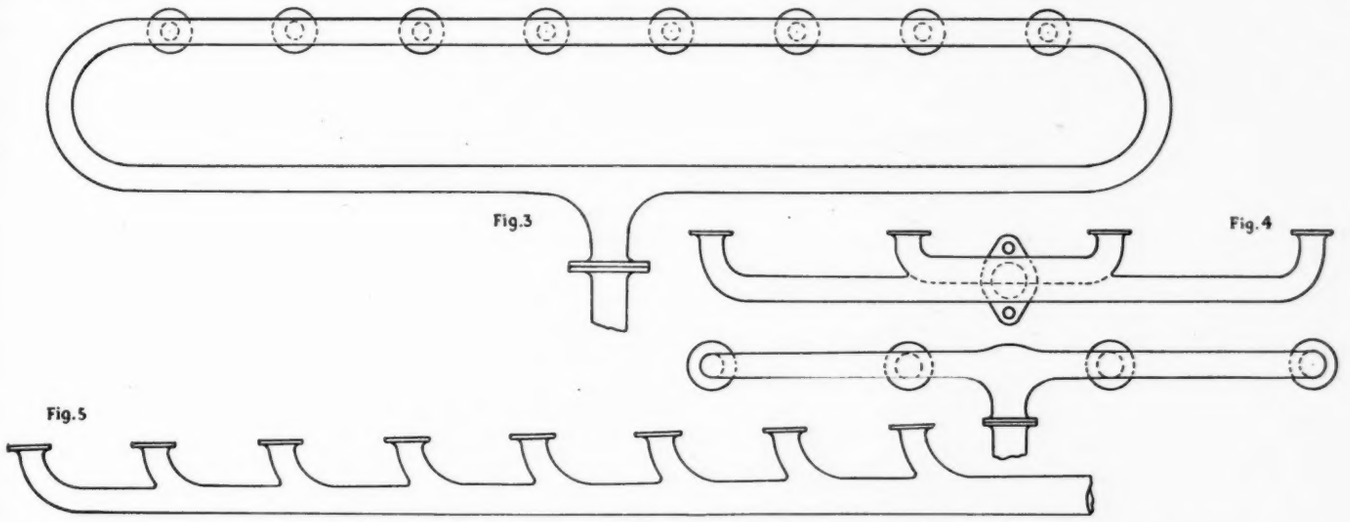


Fig. 3—Loop type of inlet manifold for vertical eights. Fig. 4—Four-branch inlet manifold. Fig. 5—Suggested form for vertical eight exhaust manifold

the piping is very simple indeed. This plan could be followed, even though the cylinders were cast in two blocks of four, by merely providing a short connecting nipple between the inlet headers in the two blocks.

That the problem of insuring equal distribution in an eight-cylinder vertical engine is a difficult one is indicated by the fact that all of the engines of this type participating in the recent Indianapolis race carried either four or eight carbureters.

In racing work maximum volumetric efficiency and the best possible distribution from both the quantitative and qualitative standpoints are, of course, of the highest importance. With a separate carbureter for each cylinder, not only can the inlet passage be made of the simplest possible form, thus insuring a high volumetric efficiency, but the fuel mixture can be adjusted separately for each cylinder. By the use of a pressure indicator or similar device the adjustments can be varied until all of the cylinders show substantially the same explosion pressure, thus indicating equal distribution, if this term may be used in a case where no manifold is being used.

With the crank arrangements in common use, the firing strokes of each pair of adjacent cylinders do not overlap to any extent and the conditions for uniform distribution would seem to be fairly good if one carbureter were used for each pair of cylinders. The construction could be simplified by using one float chamber for two adjacent carbureters, the same as is done where a separate carbureter is used for each cylinder. However, for commercial work four carbureters for one engine are decidedly too many.

Two Carbureters Practical

It is quite possible, however, that two carbureters are a practical proposition. If the inlet header were cast in the cylinder block these carbureters could be bolted against the ends of this header. As compared with the arrangement previously described, in which a single carbureter is bolted to the middle of one branch of a looped manifold, the double carbureter scheme has the advantage that it reduces the number of corners the combustible mixture must turn on its way from the carbureter to the cylinders, thus reducing the resistance to the flow of the mixture and tending to increase the volumetric efficiency.

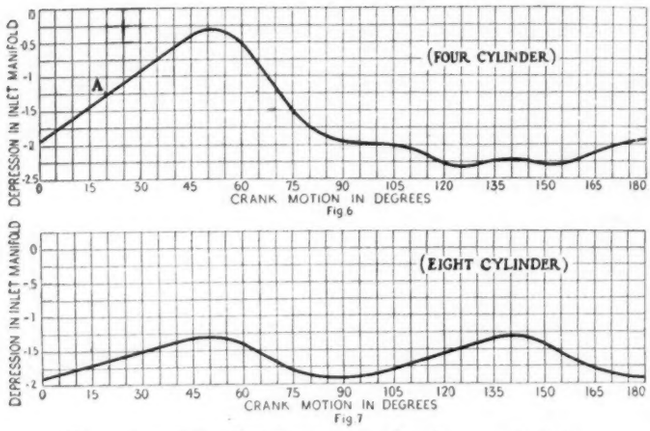
There are also several objections to this scheme. Notwithstanding the fact that each carbureter of the pair needs to have only about one-half the throat cross-section as would be required in a single carbureter, the cost of the two would be materially greater than that of the single larger device. Besides, two gasoline connections, two hot air connections, two throttles and two hot spots (if the latter feature is included in the design) are needed, and this involves increased complication. Furthermore, one of the weakest points of the eight-cylinder vertical engine is its great length, and carbureters bolted to the front and rear ends of its valve chamber or cylinder head might necessitate a still further increase in the length of the engine space and its bonnet.

Uniform Suction in Manifold

Where the highest possible engine speed is aimed at the double carbureter scheme has its advantages, and the proper plan of using two carbureters on an eight-cylinder vertical engine is evidently as here described, by connecting them to opposite ends of a header connecting all of the inlet ports, rather than to have each carbureter supply four of the cylinders separately.

There are undoubtedly other methods of manifolding an eight-cylinder vertical engine and securing at least tolerably uniform distribution, and one way would seem to be as illustrated in Fig. 4. The carbureter is located in its usual position at the side of the engine about midway between front and rear, and the inlet ports of each pair of adjacent cylinders are siamesed, so that there are four connections between the manifold and the cylinder block. From the carbureter a short riser leads to a distributing chamber directly above it, and from this distributing chamber four branches run to the four inlet ports. The two branches to each side of the riser could be made of such form as to give the impression of a single pipe of substantially square cross section, thus insuring neat appearance. With the two types of crankshaft recommended the flow of the inlet gases, as one cylinder comes into action after another, always changes from one branch to another, and the only thing that might cause a tendency to unequal distribution is that the branches of the manifold leading to the outer pairs of cylinders are slightly longer than those to the inner pairs. The slightly greater resistance to flow due to this greater length could be compensated for by making the cross sections of the longer branches somewhat greater.

With either of the forms of manifold described any of the eight possible firing orders can be used, and the chances are that results will be the same whatever the firing order.



Figs. 6 and 7—Suction curves for four and eight-cylinder inlet manifolds

One feature of the eight-cylinder engine that should make for good carbureter action is the comparatively uniform suction in the manifold. Fig. 6 illustrates the variation in suction in the inlet manifold of a four-cylinder engine during a half revolution.

The curve was obtained with an optical indicator using a very light spring and represents conditions corresponding to operation under full load at full speed. The points at which one inlet valve closes and the next one opens, which happen to coincide in this particular engine, are indicated at A, and it will be noted that during the period immediately ahead and immediately after the point of valve opening and closing the suction in the manifold decreases rapidly, which is, of course, due to the fact that at this time little charge can pass into the cylinders and the manifold therefore has a chance to fill up.

It was found that at low engine speeds the pressure in the manifold even became positive, which is due to the inertia of the gas column. By drawing two curves like Fig. 6, one displaced horizontally with relation to the other a distance equal to that representing 90 deg. of crank motion, adding the vertical ordinates and then reducing the scale to one-half, we get the form of suction curve which may be expected to apply to the inlet manifold of an eight-cylinder vertical engine (Fig. 7).

As regards the exhaust manifolding, since there is such great overlapping of exhaust strokes, it would seem at first sight that cylinders exhausting in succession must not be allowed to discharge into a common exhaust pipe close to the engine. It has been found with six-cylinder engines that if all of the exhaust ports are connected to a common exhaust header, exhaust gases "blow over" from a cylinder whose exhaust valve is newly opening to one whose exhaust valve is about to close, causing improper evacuation of the latter and sometimes greatly reducing the power output.

Manifold Pressure at Maximum

In a six-cylinder engine this effect is particularly strong for the reason that there is only a moderate amount of overlapping of exhaust periods, and one exhaust valve closes not so very long after another one has opened, and the pressure in the manifold is therefore practically at its maximum.

Assuming the total period of exhaust opening to be equal to 230 deg. of crank motion, in an eight-cylinder engine, when one exhaust valve begins to open the one preceding it still remains open for 140 deg. of crank motion, and even if there should be some blowing over of exhaust gases from the first to the second cylinder, the latter would have plenty of time to clear itself. Of course, the exhaust valve of a third cylinder begins to open 50 deg. of crank travel before the exhaust of the first cylinder fully closes, but this occurs also in four-cylinder engines, and in these engines does not prevent the use of a common exhaust manifold for all cylinders. The reason no trouble is experienced from "blowing over" in this case is undoubtedly that the valves open and close so gradually that at no time during this 50-deg. period are both valves open to any extent.

Single Exhaust Tract Feasible

It would, therefore, seem quite practical to use a single exhaust manifold for an eight-cylinder vertical engine, but it must be of sufficient size and used in connection with a muffler of such type as to prevent the building up of a considerable pressure within it. On the other hand, if the last ounce of power is wanted from the engine it is probably better to use two exhaust tracts or manifolds and discharge alternate exhausts into the same tract.

In eight-cylinder V engines two manifolds and two mufflers are always used, but the reasons for this are mainly structural. In using a single manifold or exhaust tract for an eight-cylinder vertical engine it is, of course, a good plan to curve the branches of the manifold so as gradually to impart a backward direction to the gaseous stream. If this is done, the blast from the cylinder whose exhaust valve has most recently begun to open should exert an ejector effect on the cylinder whose exhaust valve opened just previously, rather than a retarding or "blow-over" effect.

Double Control on British Truck

THE makers of the British Garrett trucks have introduced a 3-ton electric model which can be fitted, if desired by purchasers, with duplicate controls for steering, brake and electric controller projecting from the side of the vehicle.

This feature enables the driver to assist in loading or unloading without having to waste time and energy getting into and descending from the driving seat when the stops are a comparatively few feet apart. It is held that this form of auxiliary control is particularly desirable for vehicles used for refuse collection, but that it also fulfills a requirement in some branches of commercial use.

The auxiliary controls are arranged at right angles to the ordinary ones; the steering column is horizontal, as also are the brake and controller levers. In each case there is inter-connection; the same steering wheel is, however, used at the side as in the cab, and on this account it is secured to the column in the one case and the horizontal shaft in the other by a quick form of attachment.

The brake lever outside connects to the rods of the inside pedal brake and has a "secret" catch, reducing the risk of its being released by unauthorized persons. The controller has a spring return which carries it to the "off" position immediately the driver removes his hand from it.

THE Electrical Equipment Division of the Bureau of Foreign and Domestic Commerce has recently published a "Glossary of Electrical Terms and Instructions to Exporters" for the guidance of export officials in making customs declarations on foreign shipments. The pamphlet, which was prepared in conference with the Electrical Manufacturers' Council, lists both the terms as they should appear on the declarations, and as they appear in the governmental statistics of shipments. The glossary has a purchase price of 5 cents.

Problem of Parking More Important Than Control of Traffic

Incapacity of streets will determine saturation point for motor vehicles. Means for accommodating standing cars lacking in almost all large cities. Efforts so far have brought no solution. Civic planning needed to relieve congestion.

By John Ihlder
Manager, Civic Development Department, U. S. Chamber of Commerce

A FEW years ago automobile salesmen talked about the saturation point in terms of the public's buying power. They calculated the possible number of automobiles in a State by the number of families with a certain income. Today such figures, except as applied to the rural population, are going into the discard. The saturation point for automobiles is coming to be the incapacity of streets not only in cities, but even in towns and villages, to hold more cars.

We have suddenly awakened to the fact that the interesting game of regulating traffic, while the more dramatic, is not the more important part of our problem after all. The more important part is to find out what to do with automobiles, not when they are moving, but when they are standing still. Until some inventive genius invents a collapsible car that can be folded up and put into the hall closet or a corner of the office this question of what to do with an automobile when it is not in use is going to cause more and more concern to manufacturers and salesmen and to would-be owners than ever has been caused by justices of the peace with a keen eye for local revenues.

Problem Only Recently Realized

Of course we have been making tentative and superficial efforts to answer this question for some time, but with results so unsatisfactory that in the largest cities car owners have given up the attempt to drive to their offices near the center and even in moderate sized towns the merchants, the police and the car owning public are most dissatisfied with these results and with each other.

So recent is our realization of this problem that there are regulatory authorities who still approach it from the point of view that the automobile owner is more or less of a nuisance who should be thankful for whatever facilities are grudgingly granted him, and some traffic experts who maintain that inasmuch as two or three riders in an automobile take up more space in a city street than do several times that number in trolley cars or subway trains, therefore the answer is to limit more and more strictly the use of automobiles in downtown areas, perhaps confining it to taxicabs which, being more constantly in use, serve a greater number of passengers and call for only a fraction of the parking space.

Of course such a solution as this is no solution, but is rather a method of intensifying conditions that make for further overcrowding of our already overcrowded business and apartment house areas. The means immediately available for dealing with the standing automobile are limited and are largely in the nature of more or less unsatisfactory expedients. The first requisite is to approach the problem from the point of view that the automobile, passenger car as well as delivery truck, is a necessity of modern life and that our purpose is to facilitate its use. The degree in which various expedients may be used will vary in different cities and towns according to local conditions. There are, however, some generalizations which may be used as guides.

First, the streets are designed primarily for transit. Consequently they must be kept free from standing vehicles to the extent necessary for an even, uninterrupted flow of traffic.

Second, the entrances to hotels, office buildings, large stores and other buildings in which there is a great amount of coming and going must be kept accessible.

Third, so far as is consistent with the foregoing, car owners should be permitted to park their cars on the public streets or other public space in front of or close to their destination and leave the cars there all day if they so desire. The third generalization is, of course, an ideal, and as with ideals can be only more or less approximated.

Between all day parking and the stop to discharge passengers before a hotel, there are gradations in time limits the value of which is still largely theoretical. Whether a fifteen-minute parking limit is, as a rule, of practical use, may be questioned. For the man who reads your gas meter this would be ample. Perhaps it should suffice for the life insurance agent. But it is not enough for the woman who is buying material for a new set of curtains or for the family dinner. Perhaps we shall come to a simple three-fold classification of parking spaces on business streets; stop to discharge passengers, shopping stops which may extend from fifteen minutes to half a day, and all day parking.

But with all the time limit expedients we can devise our streets in the business districts and in many apartment house districts are now inadequate to contain all the cars whose owners wish to park them there. Supplementary parking space must be provided.

Unbuilt Areas for Parking

In towns and cities where there are considerable areas near the business section—but not with valuable business frontage—still unbuilt upon, the municipality should acquire these and maintain them for automobile parking. It may charge car owners a small fee for this service on the principle that it charges users of city water, or it may give the accommodation free on the principle that it permits free use of the sewers, to take care of what might otherwise become a public nuisance.

In nearly all cities, large as well as small, there are considerable areas in the centers of blocks, even in downtown districts, now disused or wastefully and uneconomically

used. So long as these block centers remain in private ownership they are a constant temptation to the erection of deep, solid buildings, the lighting and ventilation of which are difficult and expensive. There is an economical depth, just as there is an economical height for a store or office building. Where blocks or squares are so large that this economical depth is exceeded, the rear ends of the lots may well be thrown into one open space and used for parking. Incidentally such a use, meeting a real need, would greatly lighten the task of those called upon to enforce those sections of a building code requiring light and ventilation, and it would maintain the rental value of rear offices which would no longer be shut in by the solid walls of a neighboring structure.

Demand for Space Never Met

But as this phase of municipal service is likely to be slow in developing—though Chicago, for example, is already using part of Grant Park along Michigan Boulevard for parking and Brockton, Mass., has created an open space in the business district for this purpose—and never will meet fully the demand in the present centers of existing cities, there is a large field for private enterprise which would cater to those owners who have the means to pay for service, who wish their cars protected from storm and sun when not in use, who need mechanical assistance or who just feel more comfortable when their cars are safe from thieves.

To meet this demand a number of methods are now being tried out, ranging all the way from storage buildings several stories in height equipped with automobile elevators, to the use of basements or cellars reached by ramps. Private initiative also has seized upon vacant lots and in some cases the back yards of business blocks and is using these temporarily for automobile parks. What private initiative has here begun, indicates that municipal service can more adequately and systematically do. One rule to use as a guide here is that all such storage or parking spaces should have their entrances and exits—and they should have separate entrance and exit—on side streets or minor streets where the constant crossing of sidewalks by automobiles will least interfere with pedestrians.

Trucks Offer Greater Difficulties

But so far as we now know the use of all these methods to the utmost practicable extent will not meet the demand. Washington, which has a larger proportion of its downtown area given up to streets than any other city, which has many downtown streets so wide that cars can be parked at an angle on both curbs, seems to find the parking problem as difficult as other cities. The reason apparently is that the greater parking area results in a greater use of automobiles. It is the antithesis of New York City where in lower Manhattan the very limited parking space almost prevents the use of private cars. That is, the greater parking space puts off the saturation point and thereby benefits the community.

So far I have had in mind the passenger automobile, not the truck. The latter presents problems peculiar to itself. Except for the small retail delivery truck, its size alone makes difficulty. If parked parallel to the curb it takes up a large amount of space and is placed inconveniently for loading and unloading. If parked at an angle it projects so far into the roadway and often so far over the sidewalk as to be a very real impediment to traffic.

In towns and small cities with their problems of size still in the future, in the still spacious suburbs of big cities, where city planning has today a fairly free field, there is opportunity to provide for future needs. The fundamental evil in our urban centers is the crowding of people too close together. The essential point to bear in mind in our new developments is the value of adequate open spaces. To create great parks and well equipped playgrounds as means of relief for those living huddled together in barrack tenements or packed into suffocating subways is but to give a mild antidote after administering a dose of poison. Human beings need space if they are to live and develop properly. Even in the congested downtown areas of our old cities the automobile may have some effect in thinning the population simply by occupying buildings or parts of buildings that otherwise would shelter swarming masses of people. In the suburbs and in the smaller cities they may prevent congestion by reason of the space they occupy.

In residence districts there are at least two considerations which make the situation different from that in business districts. Nearly all the differences over which men become excited are not differences of kind, but simply differences of degree, difference of emphasis. Here is such a difference. A business street, the frontage of a business block, is much more a community property than is a residence street, the frontage of a residence block. A citizen or a tourist may have a perfect right, based upon the general good, to park his car in front of your store and leave it there, while he may have no such right to park and leave it in front of your house.

Districts Differentiated

If only an occasional stranger parks his car before your house and does it only on occasional days, the annoyance is so slight that you will probably pay no attention to it. But if the curb in front of your house is constantly occupied by the cars of strangers so that you cannot drive up to your own front door and so that your visitors have to leave their cars at a distance; if the starting of motors and the smell of gas constantly wreck your quiet and peace of mind, you have legitimate cause of complaint.

The second consideration which differentiates business district parking from residence district parking is that in the former parking is nearly always only a day time affair, or, near theatres, an evening affair, while in residence districts, especially in these times of high building costs, it tends to become an all night affair. While admitting the practical difficulties faced by the car owner due to building costs, it should be the rule that all night parking of cars on public streets be forbidden. The owner may not be able to build a garage now, but he should at least drive his car on to his own lot. If he lives in a row house erected upon a lot so small that it contains no space for a car, or if he lives in an apartment house which provides no storage facilities for its tenants, then he is under the necessity of renting garage space somewhere else.

Double Decked Streets Injurious

You will have noted that in this discussion there is no suggestion for automobile subways or for double decked streets, or for sidewalks raised a story above the roadway. All of these have been suggested in more than one city and in New York such suggestions have assumed very definite form. My belief is that automobile subways would be not only ruinously expensive but that they would be community liabilities in other ways. Double decked streets might cost less to construct but they would be quite as injurious to those who must use the close lower level. An argument may be made for such construction if it is of small extent and undertaken in connection with other improvements, as on South Water Street in Chicago, but this is exceptional. Raised sidewalks would provide a great amount of parking space beneath, but, even assuming that they can be hung on brackets or supported in some other way not necessitating posts or pillars which create a hazard for traffic, they, with the required bridge across in-

tersecting streets, would shadow and darken the roadways and parking spaces below.

A generous provision of open streets will prove far less expensive to construct and maintain than would such underground passageways. As a basis for determining what is adequate I would suggest:

On main streets in retail business districts the roadway should be wide enough for a line of cars on each side, parked at an angle of 45 degrees, for a line of traffic in each direction and for two trolley car lines. In this case the parked automobiles would be along the curbs. If the street is enough wider to permit two lines of traffic on each side, so that the stopping of an automobile for a moment would not halt traffic, the parked automobiles may be put near the center of the street flanking the trolley car tracks so leaving the curbs available for discharge of passengers. This also has the advantage of preventing automobiles from using the traction right of way and so impeding trolley service. Otherwise it is necessary to keep the traction right of way available for automobile traffic which will occasionally have to circle about a stalled car.

On secondary business streets the width should permit of two lines of cars parked parallel with the curb, though parking parallel is not so good as parking at an angle.

In apartment house districts streets should be wide enough for parking at an angle.

In one-family house districts there should be no need of providing for continuous lines of parked cars. Unnecessary width of roadway means unnecessary cost for the home. It is cheaper to park one's car in the yard.

Buenos Aires Offers Opportunities for Bus Development

By M. T. Meadows

SMALL buses, carrying twelve passengers, a driver and a conductor, are becoming exceedingly popular with the general public in Buenos Aires. These buses consist of Ford ton-truck chassis equipped with a locally built body. They are now operated on nearly all of the less congested streets between the principal railway stations. A charge of 20 centavos Argentine paper (about 8 cents U. S. currency) is made, against the flat rate of 10 centavos on street cars.

There are other buses of a larger type running between different zoned sections of the city. Fare is charged in accordance with the length of the trip. Apparently all of these buses are doing a large business, because passengers save considerable time in rush hours when street cars are held up by traffic congestion.

The delay in starting such a bus service here can hardly be understood, in view of traffic conditions. Buenos Aires is spread over a larger area than any other city of the same size (2,500,000, including adjoining suburbs) in the world. Moreover, while the majority of the streets are very narrow in comparison with those of American cities, there are a number of wide boulevards interconnecting every important district of the city.

The small bus has proven so successful that a heavier type of vehicle is now required to meet traffic needs. Double-deckers, such as ply Fifth Avenue, New York, can not be employed in Buenos Aires, because the streets have a network of overhead trolley wires under which they cannot pass. The ideal bus for Buenos Aires would be one somewhat similar to those used in Paris, although a narrower body and a slightly less cumbersome chassis would be preferable.

Large Market Now Open

American manufacturers in a position to supply such vehicles at a reasonable figure should investigate the situation promptly. The Municipality of Buenos Aires has decided to substitute motor-driven cars for the horse and mule drawn scavenger and refuse carts at present employed. This decision will be put into effect just as soon as the proposed Municipal loan has been sanctioned. It means that something over 400 motor-driven street sweepers, sprinklers, rubbish carriers and general utility vans will be needed immediately to replace the 1600 horse-drawn vehicles in use at present.

The market is still open and any American maker in a position to go after the business immediately stands a good chance of securing the contract. Several American concerns are already on the ground with samples, but up to the present writing no tests have been carried out. Two or three French firms and at least one Belgian house also figure as possible suppliers. This order if secured will pave the way for further orders from other cities and in addition furnish the successful suppliers with what should prove to be a valuable and permanent market for accessories and spare parts.

Correspondence on this subject will be of but little worth in swinging the deal to an American factory. Effective representation by a reliable concern, preferably American, having practical engineering experience and an equally practical knowledge of the most efficient manner of handling official business in Argentina, is a prerequisite if negotiations are to be successful.

Alloy Steel Etching Reagents

AN investigation for etching reagents for alloy steels which has been in progress at the Bureau of Standards for some time has yielded the following results to date: The metallographic etching with the usual acid etching reagents fails to identify the different constituents that may be present in the alloy steel, such as the carbide of iron, chromium, tungsten or vanadium, tungstide of iron, and possibly complex compounds as double carbides.

Use of the usual inorganic acids offered little hope of success because of the general resistance of the above-mentioned constituents to the corrosive action of the acids.

Experimental work was next carried out on various alkaline solutions with and without the use of oxygen gas or oxidizing agents, the results of this work being the development of a new etching reagent, namely, a potassium permanganate and sodium hydroxide mixture.

With the object of establishing the identity of the metallographic constituent known or believed to be present in the microstructure by noting its behavior toward the various etching reagents, etching tests were made on various amounts of the alloying element and of carbon.

The results obtained so far show that it is possible, by proper selection of the etching reagent, to determine in a satisfactory manner the presence or absence of the different constituents in the micro-section and also to distinguish between several of the constituents when two or more are present in the same micro-section.

Renault Adopts Front Wheel Brake for Six Cylinder Models

Servo mechanism, consisting of a friction clutch and equalizer is mounted back of gear box and driven at low speed by worm and worm gear combination from tail shaft. Conventional type of expanding shoe utilized. High pressure obtained.

A SERVO-BRAKE mechanism is installed in conjunction with a four-wheel braking system on the new Renault six-cylinder models. All four brakes are of the expanding shoe type and of rather conventional design. Operation is obtained at the front by a universal shaft which is supported at the frame at the inner end and at the cam which is concentric with the axis of the steering knuckle pin at the outer end. Adjustable levers on the two front brake shafts are connected to levers on the front equalizing shaft by cables of fixed length. The rear operating levers, also adjustable, are mounted on shafts supported from the axle housing and are connected to the rear equalizer levers which are mounted on the torque tube by links of fixed length.

The hand or emergency brake is connected to the rear brake equalizer shaft independently of the servo-brake system and therefore retards only the rear wheels. The servo mechanism, consisting of a friction clutch and equalizer, is mounted back of the gear box and driven at relatively slow speed by a worm and worm gear combination from the tail shaft. The equalizer in this mechanism is of the bevel gear type, as are both the front and rear, and serves to equalize the braking effort at the opposite axles. As the drive of the servo mechanism is taken from the tail shaft, which rotates at the same speed as the propeller shaft, the braking effort is inter-related with the speed of the car. This provision prevents the possibility of skidding due to locked wheels.

Referring to Fig. 1, the worm is mounted on the tail shaft, A, and drives the worm gear, B, which in turn drives the actuating shaft carrying the integral clutch disc, C, through the ratchet, H. A sleeve, having the integral clutch disc, D, at one end and the multiple-thread engaging screw, G, at the other end, is mounted freely on an extension of the shaft carrying the disc, C. The pins upon which the equalizing pinions have their bearings are also carried on this sleeve. The equalizing or compensating levers are centered freely on the same sleeve, one at each side of the equalizing pinions.

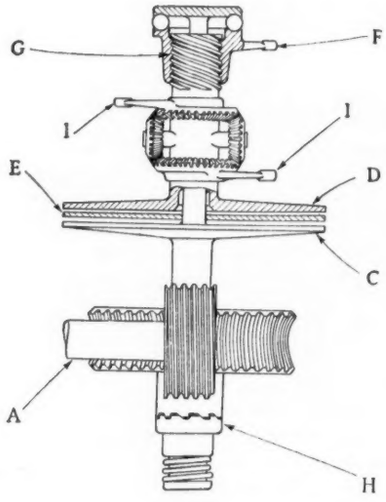
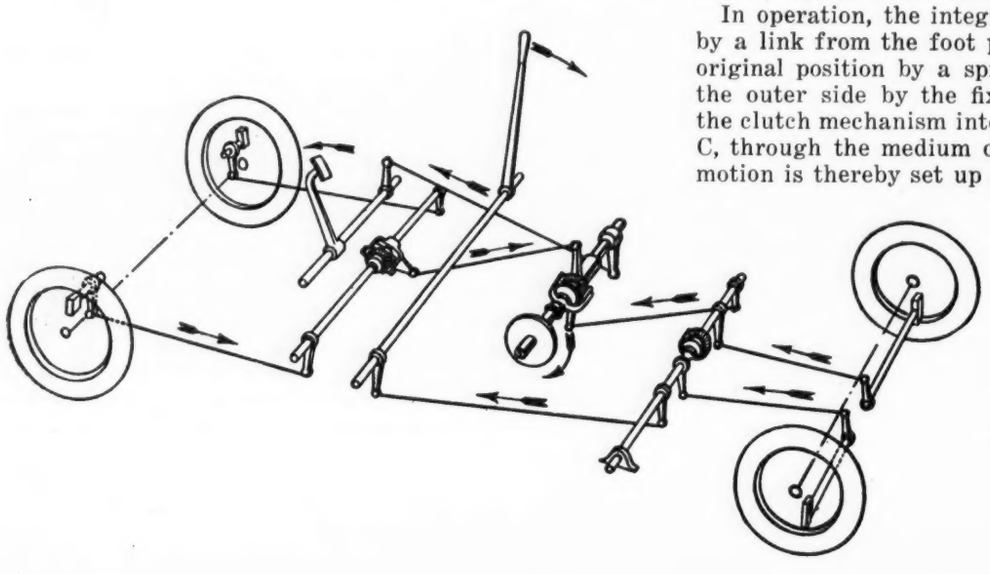


Fig. 1

In operation, the integral lever and nut, F, is rotated by a link from the foot pedal, which is returned to the original position by a spring, and as it is supported on the outer side by the fixed ball thrust bearing, forces the clutch mechanism into contact with the rotating disc, C, through the medium of the ferodo disc, E. Rotative motion is thereby set up at the disc, D, which is carried



Diagrammatic sketch of Renault four-wheel braking system showing servo-mechanism and equalizers

on the same sleeve member as the equalizing pinions, in turn transmitting the motion to the levers which are integral with the equalizing gears. One of these levers extends upward from the shaft center and the other downward, so that when in operation the intermediate linkage for both the front and rear systems is in tension and the moments on both sides of the equalizing pinions tend to balance in the same direction.

Braking effort is therefore proportionate to the pressure applied at the foot pedal and the speed of the car, but at high speed can be several times that which could be developed by direct action between the foot pedal and the brake cams. When the car is being driven or rolling backward, the ratchet, H, makes the worm gear servo drive inoperative. Braking by means of the servo mechanism is accomplished under this condition, however, by the regular foot pedal depression. The worm and screw, F and G, force the clutch discs into close contact in the first part of the angular motion and then rotate the entire servo mechanism as a locked unit, applying braking pressure equally at both axles through the equalizer levers in the usual way. The pressures set up in this manner are less than those developed by power operation of the mechanism but are sufficient for the requirements of the particular circumstances.

Links of fixed length, which are adjusted at the factory, connect the equalizer levers of the servo mechanism to the front and rear equalizers, which in turn operate to equalize the braking effort transmitted to the wheels at the opposite ends of the axles. The servo mechanism and the front wheel equalizing shaft are located under the front floor boards and a convenient adjustment for wear of the friction disc is placed at one end of the actuating clutch housing. A housing, which is mounted on the torque tube just back of the ball joint, incloses the equalizer levers and carries the bearings for the rear equalizer shaft and the levers that are connected by links to the actuating levers on the rear axle.

French Aviation Progress Marked by Improved Construction

FRENCH aviation during the past year was marked by many improvements in construction, especially metallic. Many advances have been made in motor design, Salmson having put out five new ones. Progress has been made in methods of cooling and carburation; the turbo-compressor Rateau has been nearly perfected, and the metallic propeller apparently solves the problem of propulsion.

New commercial planes have been turned out by Breguet de Potez and Farman, and several are under construction by other firms. Fokker has put out a new 8-passenger monoplane, with thick wings and 3-ply construction. This machine has a special smoking compartment. The Breguet company is making a number of their 14-A2 planes for the Spanish Government, most of them equipped with 300-hp. Renault motors. Motorless planes, which did not exist in France at the beginning of 1922, by August numbered 36 at the Combergrasse trials.

French factories, under peace conditions, can turn out 6000 planes per year. Of these, 380 are for commercial use, 200 being exported. By October, 1922, 383 commercial airplanes had been registered in France as owned by companies or individuals. The relative growth in military and commercial aviation finds an interesting illustration in the percentages of these two types shown at the exhibitions since 1919. In that year military planes composed 25 per cent of the exhibit and commercial planes 12 per cent; in 1921 the ratio was 35 per cent and 19 per cent, respectively; in 1923 the military made up 43 per cent and the commercial 13.4 per cent.

The "Societe de Propagande Aeronautique" proposes to make an educational campaign for the wider use of the commercial airplane in France, and later in other parts of Europe, as an everyday means of transportation that is as safe, comfortable and convenient as the railroad or other means of travel.

American Motor Vehicles Most Popular in Ceylon

Top—80 cars, all but seven of American manufacture , awaiting the landing of a tourist party at Colombo. Lower left—American cars in Kandy near the famous Temple of the Tooth. Lower right—Katugastota, where the sacred elephants bathe in the river

New Diesel Engine May Be Practical for Automotive Use

First model recently brought from Germany. Compression pressure about 200 lb. per sq. in. Practically instantaneous ignition of fuel charge gives flexible operation. Novel injection valve design. Low grade hydro-carbon oils may be used.

OPERATION of engines of the various automotive types by the fuel injection or Diesel method is apparently made possible by a recent development which is the invention of Franz Lang, who was associated with Rudolf Diesel for many years. Low compression pressure, solid fuel injection by a controlled, pulsating pump and a novel injection valve which replaces the spark plug, unite in making this method applicable to existing or anticipated engines for automotive service. A so-called "lightning" ignition is brought about by the combination of several factors in the design and results in very rapid burning of the fuel charge with a consequent flexibility of operation. It is stated that any of the lower grades of hydro-carbon oils may be used for fuel in an engine equipped in accordance with this method.

Lang now has one of these engines, known as the Acro, on exhibition in New York, at the headquarters of the American Crude Oil Motors Corp. The present sample is of the single cylinder, two-cycle type, although the inventor has photographs and reports covering tests of the system as applied to German car and truck engines of the four-cylinder, four-cycle type, and expects to have a six-cylinder car engine upon exhibition in the near future. A single cylinder, three-port Hatsfeld engine, using hot spot ignition, has been converted for operation by the new method by the substitution of a new head containing the injection valve and the addition of a mechanically operated air intake valve on the crankcase and the fuel pump. The bore of the engine is 5 23/32 in. and stroke 6¼ in.

In so far as the pulsating pump, its control, and injection valve are concerned, the design is fundamentally the same regardless of the number of cylinders or cycle of operation. In multi-cylinder applications a positively operated distributor is located adjacent to the pump, as illustrated in Fig. 1, which is a photograph of a four-cylinder, four-cycle engine, equipped with the injection system. In this case the pump is located inside of the gearcase cover and the gear-driven distributor is installed just ahead of the cylinder block, with copper tubes connecting the outlets to the four injection valves which are threaded into the regular spark plug holes.

Maximum compression pressure is 14 atmospheres, or about 200 lb. per square inch, which is about one-half that of the usual Diesel engine. The inventor states that the efficient operation of the engine is brought about by an improved type of injection nozzle that divides

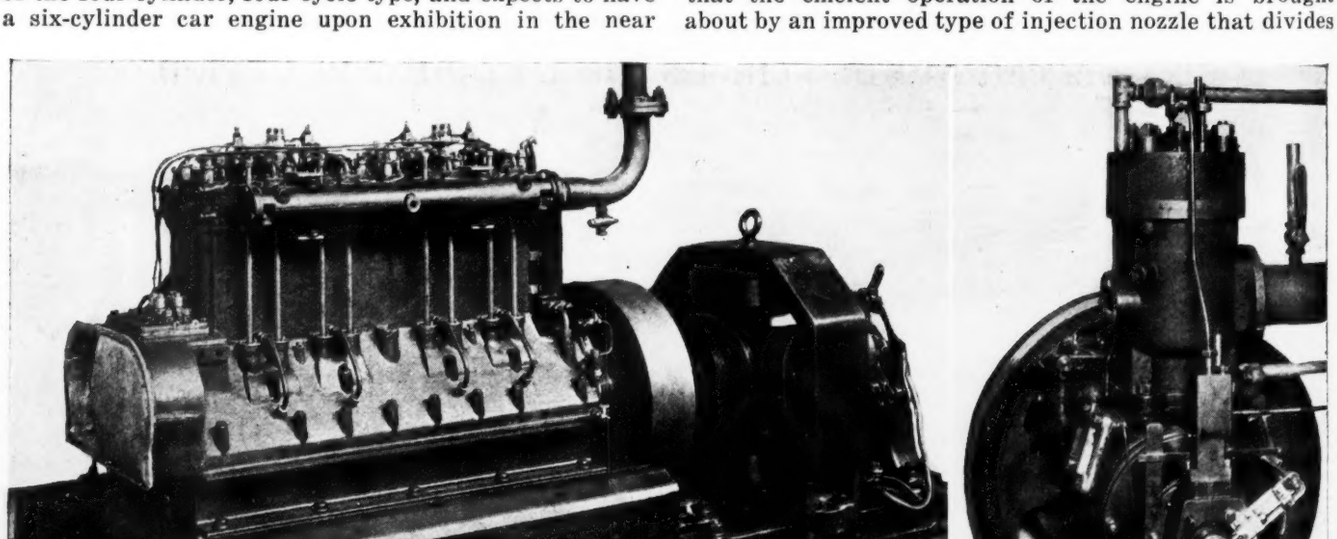


Fig. 1 *(left)—Four-cylinder, four-cycle German engine equipped with Acro injection system. The compression pressure is about* 200 *lb. per sq. in. Fig.* 2 *(right)—Sample single-cylinder engine as shown in New York*

the incoming fuel charge into very minute particles that are given the maximum diffusion throughout the compressed air charge. Pressure indicator diagrams show, under idling conditions, a short, flat dwell of the expansion curve after the peak of the compression curve, similar to the usual Diesel curve; at half and full loads the expansion curve peaks between 15 and 25 deg. after top center, the peak being well rounded and of considerable duration. At full load the maximum pressure at the peak of the expansion curve is approximately 350 lb. per square inch. The characteristics of these curves bear out the claim of "lightning," or practically instantaneous, ignition of the fuel charge. The indicator card is about midway between that of the Otto cycle and the conventional Diesel type in characteristics.

Fuel Charge Regulated at Pump

The fuel charge is regulated at the pump under a pressure of 650 lb. per square inch. In the case of the present sample engine the pump is actuated by an eccentric located on an extension of the crank shaft, as illustrated by Fig. 2. The fuel charge is metered, as we understand, by placing an obstruction under the intake valve of the pump on the compression stroke and permitting a portion of the charge to return to the pump intake line, but a fraction being forced into the compression space at the injection valve.

The metering device is operated by a horizontal rack, which is shown in Fig. 2, just above the heads of the bolts that secure the pump to its base. It is understood that this rack meshes with a pinion which regulates the pump intake valve through a screw. A full charge of air is taken in at every stroke and the fuel is metered to suit the requirements of load and speed. The air intake valve of the present sample is mechanically operated and consists of a series of leather-faced shutters oscillating in back of horizontal slots in the inspection plate at the right side. The eccentric and part of the actuating mechanism are also shown in Fig. 2.

In spite of the heavy flywheel and single-cylinder construction the present sample shows remarkable flexibility. Speed changes through the range of 200-800 r.p.m. from light to full load can be made with great ease with no apparent lag. Lang states that he has built a single-cylinder 3-hp. engine which showed the utmost flexibility from 200-3000 r.p.m. under various load conditions. He also states that, with the four-cylinder engine as illustrated, the same power and flexibility were obtained with a reduction of 30 per cent in fuel consumption after the substitution of the injection system for the previous regular gasoline carbureter and ignition equipment. The present sample has been observed to develop 8½ hp. at just over 450 r.p.m. with a fuel consumption of 0.422 lb. per b.hp.hr. when using crude oil of 0.85 gravity. Exhaust temperature was comparatively low, with no perceptible evidence of smoke.

No ignition, either electrical or hot spot, is required with this system. The engine is started in the same way as the Otto cycle type, the sample having been observed to start readily upon pulling the flywheel over by hand at the belt which connected the generator. It was demonstrated by opening the pet-cock that the engine would operate at even lower compression pressures. In this case, however, some smoke was visible in the exhaust. At this time details of the construction of the pump and injection valve are not available, but from the standpoint of observation of its operation great promise for this injection system is shown.

One-Piece Tie Rod Resembles Drag Link

A TYPE of tie rod which is said to overcome faults which have heretofore been encountered in this part of the steering system has recently been developed by the Cincinnati Ball Crank Co.

The construction of this tie rod consists of a one-piece tubular member with spring retained ball sockets similar in most respects to the drag links which have been manufactured by this concern for some time. A drawing of this tie rod is shown in the accompanying cut.

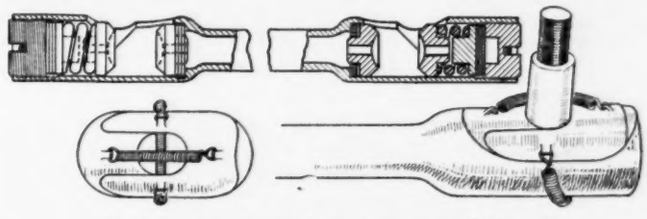
It will be noted that the springs employed to keep the socket members in contact with the balls are short and stiff and that the movable member of the socket is provided with a stop which limits its motion to a very small amount, determined by the setting of the screw plug in the end of the tube. These plugs are given an initial setting such that the spring travel is limited to 1/64 in., but the clearance may be permitted to increase to ⅛ in. as wear in the socket and ball take place.

The stationary portion of the socket seats against shims which in turn rest against a square cornered seat machined in the upset end of the tube. The shims enable a positive and close adjustment of the position of the wheels, which adjustment remains constant except as it is affected by wear in the stationary part of the sockets and the balls.

In the design of the tie rod here illustrated telescoping threaded tube ends are eliminated, since it has been found that these threads are apt to become loose and hammer out even though a split construction with two tangent bolts is employed. Tie rods with end fittings threaded on are still furnished, however, when the customer demands this form of construction.

In the one-piece rod a small diameter tube is expanded and gathered at the ends to form the sockets. The one-piece construction is said to minimize rattle and increase the life of other parts of the axle by preventing so-called "shimmying" or wheel wabble. Ball and socket tie rods also permit of the use of inclined knuckle pivots and tend to prevent binding due to axle deflection, which is apt to occur when yoke ends are employed in place of balls, especially in case the arms or yoke become bent, due to side shocks on the front wheels. The one-piece construction is said to be safer because of the elimination of yokes with threaded shanks.

A dust cover for closing the opening around the ball stud, also shown in the accompanying cut, has been developed by the Cincinnati Ball Crank Co. This fitting consists of two steel stampings held together by coil springs, which permit necessary angular motion, take up wear and prevent rattle. Beside helping to exclude dust and water the covers assist in retaining lubricant.



Cincinnati ball crank dust cover and tie rod

Definite Working Outline Needed for Market Research

Clear division must be recognized between current surveys and long-swing investigations. Latter form proper basis for interpretation. Statistical work should have specific aims. Understanding source of data essential to interpretation.

AUTOMOTIVE sales research must be divided clearly into two parts if it is to produce maximum results. The divisions needed might be designated as follows:

1. Current research.
2. Long-swing research.

Failure to recognize some such division has been responsible for the failure of many market investigations and for the discrediting of many others. Studies carried out to determine general tendencies over a period of years have been applied, unsuccessfully, of course, to immediate problems, while surveys of current conditions have been used improperly as a basis for general predictions about the future.

Misuse of research data has been due partly to lack of understanding as to the source and character of the particular figures presented, and partly to an excess of enthusiasm on the part of research departments concerning the efficacy of their product. Recognition of a clean-cut division between the two chief types of research material is essential to a proper interpretation of either kind.

Executives do not always give the statistical or research department a sufficiently clear outline of what information is desired and the uses to which it is to be put. The work of gathering marketing facts has to be carried on with a clearly defined object in view or little good can be obtained from it. Thousands of dollars can easily be spent in accumulating facts that mean nothing from a practical standpoint.

Funds Needlessly Wasted

Not one automobile company in the country would turn its foremen loose in a plant and say to them, "Get together some tools and material and build up some cars. We can't say just what kind of car you should build, as that will depend a good deal on what material you can get and how you can put it together. Build up some cars, though, and when you have finished we will figure out what best can be done with them." This would be absurd, of course. Nevertheless, a good bit of money sometimes is put into research departments on a very similar basis. Need is recognized for some kind of facts about markets and the work of collection is begun long before any definite ends have been established. Consequently, current information, general statistics and long-swing data are brought together and used without a thorough understanding of their possibilities and limitations.

"Long-swing" research is the best basis for all sound research activity. Statistical data accumulated over a period of years and properly analyzed will show certain general trends and characteristic business movements, on the basis of which it is possible to predict with some reasonable degree of accuracy what the future is likely to bring forth.

The information included in research material of this kind includes:

1. Registration figures,
2. Production figures,
3. Population figures.

In addition to these data, crop statistics, income tax figures and innumerable others of similar character might be helpful. It is too early in the life of the industry to state definitely all of the factors that might be useful if properly correlated. The essential factors mentioned above are nearly all available.

Registration Figures Available

Registrations by states are published every year. Some nine or ten states already published registrations by counties. Counter figures for the other states can be bought from various statistical agencies, while registrations by makes are available also from these agencies.

The production figures mentioned can be compiled from the statistics issued confidentially to the members of the N. A. C. C. plus the Ford figures, which have always been made public. Much of the compilation and interpretation of these figures has already been done by AUTOMOTIVE INDUSTRIES and has been published from time to time in these columns.

Interpretation and compilation of long-swing figures is still in the process of change. Better information is becoming available each year and new results are being developed. A constant study of these general factors, however, should be an important part of the work of every factory research department.

Current reports and figures can be properly interpreted only with a sound knowledge of their relation to long-swing probabilities.

Practically speaking, however, the "long-swing" figures cannot always be made the basis of interpretation for current material. To accumulate and properly analyze "long-swing" material is the work of years and cannot be completed rapidly.

In the meantime, sales quotas must be set, production schedules must be established and cars must be allotted to distributors and dealers. Current information must be relied upon as a starting point for action along this line until more basic information can be obtained.

To direct immediate merchandising effort, the general sales manager needs accurate, up-to-the-minute information about business conditions in every sales territory. Some of this he can get from business services which give weekly summaries of conditions in different sections of the country. These deal largely with retail business,

however, and frequently have to be supplemented by further information more directly applicable to car and truck sales.

Sources for this supplementary information include:

1. Factory traveling men.
2. Reports and correspondence from dealers and distributors.
3. Trade papers.
4. Telegraphic reports from special correspondents or representatives in various important centers.

Reports of this kind should be obtained regularly and provision should be made for analyzing them as soon as they are received. Many additional sales can be made by acting promptly on the basis of a report about a peculiar local condition.

Current research will also include analysis of monthly reports on sales and monthly summaries of weekly reports. The weekly studies can be made the basis of very immediate, short-time merchandising effort. They may indicate where the factory traveling man should be sent for the next seven days or where more cars can be disposed of at once.

The monthly surveys should be equally valuable to the production and sales departments. They form the basis upon which probable business for the next few months can be determined and upon which the manufacturing schedule can be adjusted.

Merchandising research is essential to future progress of the automotive industry and some such activity should be carried on in every plant. But a definite outline for market research work is needed just as much as an accurate design is needed in the construction of a car.

N. G. S.

Canadian Motor Vehicle Output Makes Big Gain in 1922

MOTOR vehicle production in Canada for the year 1922 exceeded that of the previous year by 53 per cent and reached a total of 101,007. The value of the output also increased and the percentage output of closed car models took a decided jump.

Final figures have just been published in a report by the Dominion Bureau of Statistics. These figures show that estimates for the year 1922 based on the rate of increased production in the United States placed Canadian output some 24,000 too high.

The Dominion report reads in part as follows:

The production of passenger cars during 1922 was 79,094 in addition to 13,744 chassis which were listed among the products of the firms engaged in the manufacture of automobiles. The output in 1921 was 57,401 cars and 3,697 chassis. The value of the output also increased in the latter year but not in the same proportion. The number increased by 58 per cent while the total value advanced only 16 per cent.

Imports in 1922 were 10,705, having an average value of $1,076 as compared with an export trade of 35,394 cars with an average valuation of $595. The registration of passenger cars was 462,275, an increase of 9.2 per cent over the previous year. The average selling value at the factory of the 79,094 cars manufactured or assembled during 1922 in the seven producing plants was $764, or 15.7 per cent less than the corresponding average of $906 for the output of 57,401 cars in the year previous. The decline in prices was general throughout all classes of passenger cars, but the assigned value of the chassis advanced slightly.

Truck Production Increases 59 Per Cent

Total production of trucks increased 59 per cent, or from 5,148 in 1921 to 8,169 in 1922. The number of trucks under one ton capacity increased from 467 to 915; trucks from one to five tons capacity from 4,676 in number to 7,243 or 55 per cent. As compared with the record of 1920, the output in 1922 of the heavier trucks was slightly less.

The average assigned value of the trucks manufactured in Canada declined from $747 in 1921 to $641 in 1922. Trucks with a capacity of less than five tons declined in value while the few of heavier capacity advanced slightly.

The number of engines made during 1922 in automoble manufacturing plants for assembling into cars was 52,311 as compared with a production of 44,621 in the previous year.

Imports of parts and accessories during 1922 were valued at $13,744,496, the greater part of which were used for assembling into cars. The production in the industry under review increased from a value of $5,149,503 in 1921 to $9,428,600 in 1922.

Average Number of Wage Earners Larger

Another measure of the increase in activity in the automobile industry since 1919 is found in the average number of wage-earners, which increased from 5839 in 1919 to 6043 in 1922 or 3.5 per cent. The increase in production during the same period standing at 15 per cent as indicated by the number of cars manufactured considerably outstripped the advance in employment. The following table shows this:

	1919	1920	1921	1922
Production of cars and trucks	87,835	94,144	66,246	101,007
Index with record of 1919 as base	100	107	75	115
Average number of wage-earners	5,837	7,192	4,449	6,044
Index with record of 1919 as base	100	123	76	103.5

In 1922, 7834 employees were engaged, of whom 1341 were on salaries and the remaining 6043 were wage earners. The salaries were $2,810,397 and the wages were $8,463,246, making a total of $11,273,643.

The current assets comprising cash, trading and operating accounts and bills receivable to the amount of $26,627,520 constituted 56 per cent of the total capital employed. The turnover, being the ratio of the value of the output to the current assets, was 31 per cent. Cost of material represented 66.4 per cent of the selling value of the output; salary and wage payments amounted to 13.7 per cent. The ratio of the total manufacturing expenditure to the value of the product, or the operating ratio, was 88.6 per cent.

A BULLETIN on Aircraft Development Since the Armistice has been published by the chief of the Air Service, Washington, D. C. It consists of four parts, covering airplanes, armament, engines and equipment respectively. The bulletin was prepared by the Engineering Division, Air Service, McCook Field, Dayton, Ohio.

Several New Standards Proposed at S. A. E. Meeting

Ten of thirteen division reports approved substantially in full for submission to letter ballot of Society members. Three others accepted in part and balance referred back to divisions. Felt specifications receive favorable action.

SPRING LAKE, N. J., June 19—Action was taken on the reports of thirteen divisions of the Standards Committee of the Society of Automotive Engineers which convened here today. A majority of the reports were accepted for submission to letter ballot of the Society members, but parts of three reports, namely the Axle and Wheel, Engine and Nomenclature Division reports were referred back to the divisions for further consideration.

One automotive material, for which S. A. E. specifications have never before been formulated, was added to the list of incipient standards. This product is felt. It is believed the new specifications will fill a need which has been long endured in the face of difficulties which seemed almost insuperable because of lack of cooperation of all makers of this material and a lack of knowledge among users sufficient to formulate the data needed in an intelligent specification.

Among the more important reports was that covering proposed extension of front wood wheel mountings for passenger car hubs which complete the present recommended practice for inch size taper roller bearing front axle hubs for cars and trucks. Five new hub sizes were suggested. Dimensions covering the outside diameter of hub, distance between flanges, flange diameter, flange fillet radius and bolt circle diameter were approved, but there was considerable adverse discussion about recommendations regarding the number and size of bolts and the number of threads per inch for hub caps. These items were referred back to the division for further consideration.

Twelve-Bolt Hubs Desirable

Some considered that twelve 7/16-in. bolts are more than are needed on some hub sizes, while 24, or even **16 threads, per inch on hub caps was held to give too** fine a thread for a substantial hub cap. C. C. Carlton, Chairman of the Division, stated that extensive tests had clearly demonstrated the desirability of 12-bolt hubs, the bolts now being the weakest part of the hub assembly when only 6 or 8 bolts are used.

Proposed tenon hole diameters for pneumatic tire wood wheels with steel fillers were approved. These dimensions are already extensively used by automotive manufacturers.

A proposed extension of present standards covering dimensions of metric thread ball bearings, submitted at the last annual meeting of the Society, and referred back at that time because of general opposition to further extension of metric dimensions standards, was submitted again and approved. Approval was due to the general support given it by manufacturers of this class of bearing which has been used in considerable quantities for many years.

The Ball and Roller Bearing Division also recommended a revision of the present standard under and outside diameter of metric roller bearings, making them conform to similar dimensions of annular ball bearings of the light and medium series and in width to the wide type annular ball bearing. This recommendation was approved, as was also the proposal to cancel present recommended shaft and housing fits and tolerates for ball bearings.

Electrical Equipment Standards

The Electrical Equipment Division withdrew for further revision proposed specifications for magnet wire, but its proposed standards covering 14 sizes of soft rubber bushings or grommets for use with wires and tubing where they pass through sheet metal were approved.

Several revisions in standards covering dimensions of cable terminals of various types and one new standard covering dimensions for clips (of 0.031 in. minimum thickness), for cable, conduit and flexible tubing attachment were approved.

An extension of the present starting motor mounting standards specifying limits of 3.500 to 3.503 in. for the bore in the flywheel housing into which the starting motor fits was approved.

As a result of adverse criticism of the proposed nomenclature covering various forms of radiator core, the recommendations of the Nomenclature Division in this regard were referred back to the Division. The proposal that definitions of radiator cores be standardized was first made in AUTOMOTIVE INDUSTRIES of Nov. 16, 1923. The definitions there suggested were later altered by the Radiator and Nomenclature Divisions in such a way that the definition of some types applied also to others if read literally, thus, it was contended, adding to confusion which the definitions were intended to avoid.

Nomenclature or names of other parts of the radiator assembly were approved without question.

Brake Lining Sizes Eliminated

Elimination from the present list of standards of 12 sizes of brake lining not now in general use and the addition of ¼ x 4 and 5/16 x 5 in. sizes were among the important recommendations of the Parts and Fittings Division which were adopted. There was some criticism as to the use of +0.000 limits on thickness and of the large number of sizes still listed, especially where these overlap with differences of only 1/32 or 1/16 in. in thickness for the same width. Consequently it was agreed

that a study be made looking toward the elimination of more sizes.

The list of fuel and oil pipe fittings contained in the Parts and Fittings Division printed report was not formally submitted for action, but the present standard on rod end pins was altered, as recommended, to specify tolerances of —0.002 to —0.007 in. for 3/16 to 7/16 in. nominal diameters, inclusive, and —0.004 to —0.009 in. for ½ to 1 in. nominal diameter, inclusive. A revised table of cotter pin sizes made, according to custom, of wire which is slightly under the nominal size and including 5/32, 3/16, 7/32, ¼ and 5/16 in. new nominal sizes, was approved after a discussion which made it evident that too close limits between pin and hole sizes should be avoided.

A set of specifications covering various grades and colors of felt, the weight per square yard method of test, etc., was approved with but little discussion. It was agreed that the weight specified be that of the dehydrated material.

Present obsolete specifications for license plates and plate brackets adopted in 1916 were canceled and a recommended extension of the present standard for taper fittings with plain or slotted nuts covering shafts of 1⅝, 1⅞ and 3¼ in. was approved.

Recommended Practice for Truck Cabs

The report of the Truck Division was confined to a proposed recommended practice covering certain general dimensions of two sizes of truck cabs which have been studied for several months. The proposal was approved with but little comment. It includes height and depth of seat box, height of dash, distance from top of frame to top of floor boards, distance from front dash to rear line of seat, and width of dash for trucks up to and over 1½ tons capacity.

An extension of the Iron and Steel Division data concerning the physical properties of heat-treated steel, in the form of general information, was proposed by that Division and approved by the Standards Committee. This information consists chiefly of charts which show, for one standard S. A. E. steel in each group, how for a given heat treatment the tensile strength, yield point, reduction of area and elongation vary with change in the mass (or diameter) of the test bars ranging in size from ½ to 5 in.

Recommended practice covering crankpin diameters for stationary engines, approved in 1921, was cancelled on recommendation of the Stationary Engine Division. A table of stationary engine belt speeds for engines of various power rating, formulated by the same Division, was approved.

Former Frame Standards Cancelled

On account of recent developments in incandescent lamp bulb manufacture, a change recommended by the Lighting Division providing that the distance from the contact end of the base, not including solder, to the open end of the base be increased 1/16 in., thus making the limits for length of base 0.742 to 0.758 in. instead of 0.679 to 0.695 in., was approved.

The Frames Division reported in favor of canceling the recommended practice relating to passenger car frames which was adopted by this Division in 1915. Action to this end was taken accordingly. That part of the report of the Engine Division referring to three-bolt carbureter flanges for motorcycle engines was approved, but the report which proposed changes in the S. A. E. engine testing forms was referred back owing to adverse criticism of the items dealing with the recording of data on lubricating oil, cooling system, correction of power for temperature and barometer, and fuel consumption.

Tables of specifications covering the size and arrangement of storage battery trays for electric trucks, submitted by the Electric Vehicle Division, were approved, as were also proposed minor revisions of present standards for charging plugs and receptacles and electric vehicle motors.

Specifications for tractor endless driving belts of rubber and canvas, prepared by the Agricultural Power Equipment Division, were approved as submitted. These apply to 5, 6, 7 and 8 in. four-ply and 8 and 9 in. five-ply belts in lengths varying from 50 to 160 ft. and rated to transmit from 18 to 42 hp. at 3000 ft.p.m. belt speeds.

Successful Merchandising Depends on Character of Retailers

THE success of an automobile retail organization depends on the character and capability of the individuals who comprise the organization. The prosperity of the manufacturer in turn depends on the success of the selling organization. It is not sufficient to have a salable product in these times of keen competition.

These facts were well brought out in a recent address by C. E. Gambill, president of the Gambill Motor Co., and vice-president of the National Automobile Trade Association.

In speaking of the factors essential to success, Gambill said in part:

A successful automobile distributor or dealer is one who has salable merchandise, who has character, capacity and capital. I have mentioned salable merchandise first because no one can make a success in selling any commodity whether it be automobiles, furniture, machinery, or anything else, unless it is popular merchandise. If a manufacturer cannot popularize his product by building it well and properly advertising it, no dealer can popularize it in these highly competitive times.

Character enters into the merchandising of automobiles today more than ever before. When it comes to the acid test of doing business, character and capacity of a man stand out ahead of anything else. The dealer who does not have these two assets will fail—even with salable merchandise, and I regret to say that owing to the lack of these two qualifications many dealers today are not a success—even though they have salable merchandise to sell.

I have during the last two or three years had some banking experience, being a director of the discount committee of a bank which loans considerable money to automobile dealers, as well as other lines of industry, and as a matter of fact among the last things which a bank inquires about is the amount of capital which a man may have.

Naturally it is necessary to have a sufficient amount of capital invested in your business to become successful. Likewise it is necessary to have salable merchandise, character and capacity. Possessing these four essentials, the automobile dealer is engaged in one of America's leading industries which offers greater business opportunities and at the same time one of the most interesting.

Exports of Cars, Trucks and Tires

COUNTRIES	GASOLINE PASSENGER CARS								GASOLINE TRUCKS					
	Up to $500		$500 to $800		$800 to $2000		Over $2000		Up to 1 ton incl.		1 to 2½ tons		Over 2½ tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Europe														
Austria														
Azores and Madeira									152	$34,684				
Belgium	58	$26,283	48	$28,958			10	$25,859						
Bulgaria					57	$63,789								
Czechoslovakia	1	364							4	2,124	3	$3,264		
Denmark	143	66,232	25	18,205	64	64,720								
Esthonia	3	1,479	7	4,492	1	1,232			51	16,380				
Finland	52	15,442	3	2,332	5	5,750			9	8,596	1	1,426	1	$1,426
France					6	5,732	1	5,500						
Germany														
Gibraltar			2	1,512	3	3,551								
Greece	6	2,958			3	2,633								
Iceland and Faroe Islands														
Italy	134	35,024					2	4,316	30	7,218				
Latvia									2	728	1	1,750	1	2,325
Malta, Gozo and Cyprus	7	3,302	1	680	2	2,038								
Netherlands	76	29,957	24	17,559	130	134,079	12	35,162						
Norway	522	165,587	20	13,370	102	105,870	3	7,397	289	76,709				
Poland and Danzig			3	1,822	7	6,902	1	2,750						
Portugal	6	2,246	10	7,514	4	5,412	2	6,715						
Rumania					1	1,041	4	11,364						
Russia														
Spain	997	305,968	163	109,962	176	201,932	14	36,102	340	83,867	1	1,088		
Sweden	437	138,684	62	46,166	312	315,887	3	7,217	137	36,571	6	7,585	1	1,706
Switzerland	41	19,880	4	2,894	24	26,994								
Turkey														
Ukraine					1	1,858								
England	1,187	320,750	210	136,552	293	286,539	14	65,450	21	19,535	41	49,481		
Scotland					2	2,820								
Ireland			1	585										
North and South America														
United States														
Canada	104	31,799	439	278,029	716	764,347	62	167,778	19	12,918	106	148,924	36	104,666
British Honduras														
Costa Rica											1	1,172		
Guatemala			2	1,427	6	6,525								
Honduras					1	1,232			1	657				
Nicaragua														
Panama	3	$ 1,465	5	3,459	13	15,724			6	2,184				
Salvador	6	$ 2,958	12	9,269	7	6,950	4	8,608						
Mexico	472	$167,452	91	58,071	174	184,654	6	19,815	59	25,497	69	40,270	2	6,836
Newfoundland and Labrador					5	5,449								
Barbados			1	550	2	1,778							1	500
Jamaica	15	5,764	19	14,374	12	11,633			25	9,100	5	6,887	1	2,705
Trinidad and Tobago	12	4,342	5	2,762	1	890								
Other British West Indies	9	2,419			1	1,149			4	1,806				
Cuba	588	155,278	66	49,978	58	66,952	20	48,448	112	23,558	8	7,952		
Dominican Republic	72	24,024			4	4,523					1	1,947	1	2,950
Dutch West Indies	6	2,548	1	590	1	1,041			2	728				
French West Indies	1	500			2	1,624								
Haiti	4	1,472	8	5,926	10	10,630					2	2,934	2	4,465
Virgin Islands	2	900							1	500				
Argentina	161	69,747	97	71,099	186	200,993	18	52,936	8	4,732	4	4,544		
Bolivia					3	3,753								
Brazil	39	18,333	31	20,103	140	139,015	5	13,449	15	3,548				
Chile	9	3,367	13	9,535	32	37,403			46	26,758	2	2,300	2	9,075
Colombia	36	13,120	1	781	20	21,401	1	2,240	9	2,736				
Ecuador			2	1,512	8	9,536			8	2,548	1	987		
British Guiana	7	2,219	2	1,600							1	1,047		
Dutch Guiana														
French Guiana									1	364				
Peru	9	3,269	6	4,566	8	7,569			5	3,176	5	11,050		
Uruguay	268	80,541	15	10,014	25	28,417	3	9,921	20	5,259				
Venezuela	28	12,173	2	1,550	27	25,354	4	9,864	16	5,886				
Asia														
Aden														
British India	31	17,034	63	37,991	68	68,109	3	8,485	4	6,100	3	3,264	7	7,727
Ceylon			29	18,912	8	9,289	3	8,260	1	1,213	3	4,735		
Straits Settlements			25	16,010	8	8,407								
China	12	4,174	33	21,011	16	22,647			6	3,120	6	2,184		
Chosen														
Java and Madura	19	13,143	36	20,650	76	81,330								
Other Dutch East Indies					2	1,910					2	1,836		
French Indo China														
Hejaz, Arabia and Mesopotamia														
Hongkong					1	847			4	1,680				
Japan	115	35,581	36	21,895	29	35,142	9	25,894	150	49,200	4	7,542	1	2,875
Kwantung	10	3,500	5	2,880					10	3,240				
Palestine and Syria	53	16,671	26	19,259	22	25,120								
Persia	5	1,308												
Philippine Islands	30	9,700	20	15,121	28	28,194	3	8,056	20	7,000				
Siam														
Turkey														
Oceania														
Australia	437	181,706	687	438,055	621	613,981	24	56,993	68	67,692	92	108,964	24	40,472
British Oceania			3	2,268										
French Oceania	2	832	1	525										
New Zealand	27	12,390	70	48,014	230	210,475	3	9,316	5	3,621	22	26,980	2	6,123
Other Oceania			1	650										
Africa														
Abyssinia														
Belgian Congo	9	3,300	2	1,050					16	5,440				
British West Africa	15	6,277	23	14,052	11	10,093			49	33,737	4	4,032		
British South Africa	28	13,266	94	65,675	375	395,958	1	2,243	8	6,600	11	13,444		
British East Africa	6	2,600	1	550	6	5,388					1	2,000		
Canary Islands	6	2,335			13	15,379							2	3,096
Egypt	4	1,972	10	7,255	9	9,031								
Algeria and Tunis	16	5,226												
Other French Africa	14	4,701							7	2,492				
Italian Africa														
Morocco			1	550			1	2,466						
Portuguese East Africa					3	2,553								
Other Portuguese Africa	2	636			3	2,937								
Spanish Africa														
Other Countries														
Total	6,365	$2,077,274	2,567	$1,696,232	4,184	$4,347,139	236	$662,604	1,740	$609,502	406	$469,599	84	$196,947

Canadian Exports for April, 1923

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS		TRUCKS		PARTS	COUNTRIES
			Casings		Solid		Inner							
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
														Europe
					12	$480								Austria
		$333	126	$2,172			102	$245						Azores and Madeira
		207,411	619	8,395			175	400	30	$22,508			$490	Belgium
														Bulgaria
		900												Czechoslovakia
		515,873	5,131	59,146	16	539	6,104	9,028	13	12,897			11,037	Denmark
		357	18	159					2	2,326			145	Esthonia
		580	357	7,217			365	849						Finland
		137,150	215	5,648			449	895	2	2,697				France
		258	119	2,552			41	73						Germany
		139	18	175										Gibraltar
		2,128	752	9,582	18	582	350	1,033						Greece
		46	244	2,637			202	300						Iceland and Faroe Islands
		6,538	1,419	15,922			1,290	2,678						Italy
		566	68	1,095	276	9,907	529	2,342						Latvia
		699	45	563			25	49						Malta, Gozo and Cyprus
		11,502	1,048	14,136	28	1,023	742	1,133	9	7,778			244	Netherlands
		9,276	1,313	21,824	231	8,406	399	698					461	Norway
		319					4	22					77	Poland and Danzig
		4,669	316	3,449			240	303	2	2,622				Portugal
		739	235	3,396			216	472						Rumania
		907							1	1,113				Russia
		190,851	359	5,019	141	4,152	75	130	61	76,874			16,261	Spain
		24,304	4,570	84,647	22	1,067	2,209	4,481	20	23,296			707	Sweden
		1,780	205	3,466			144	311						Switzerland
		1,827												Turkey
														Ukraine
		484,508	67,608	514,718	1,469	37,016	40,179	48,064	958	574,227	25	$14,429	48,725	England
		3,982	733	5,757	48	899								Scotland
		104,197	181	1,703			164	207						Ireland
														North and South America
									5	3,192			52,945	United States
1	$2,151	2,012,964	7,625	97,286	508	22,459	1,457	2,391						Canada
		57	29	173			90	136						British Honduras
		899	79	1,753			72	179						Costa Rica
		1,895	124	1,924	4	202	114	356						Guatemala
		1,652	96	1,851	5	258	117	216						Honduras
		195	43	711	24	422	32	75						Nicaragua
10	13,334	7,802	524	7,533	100	1,135	1,015	1,728						Panama
		3,469	306	7,178	28	975	645	1,743						Salvador
		84,176	3,431	27,619	25	1,452	984	2,653	2	2,367			21	Mexico
		2,655	168	2,435			168	424	6	6,473			51	Newfoundland and Labrador
		1,686	15	224			22	36						Barbados
		4,621	662	9,767	44	828	477	1,071						Jamaica
		4,819	242	3,514	26	462	416	735						Trinidad and Tobago
1	100	1,737	121	1,550			286	399	20	13,781			784	Other British West Indies
1	575	53,890	6,702	74,836	586	15,614	3,365	5,499						Cuba
		3,706	963	10,507	44	1,086	1,053	1,778	2	2,287			13	Dominican Republic
		1,273	44	419			50	81						Dutch West Indies
		2,437	146	1,772	6	174	206	322						French West Indies
		4,815	365	6,384			364	787						Haiti
		607	55	664			40	88						Virgin Islands
		918,633	9,695	93,125	139	4,242	15,669	23,598	159	106,564			10,571	Argentina
		189	116	2,009			24	72	6	6,806			237	Bolivia
		414,370	4,844	47,324	150	3,966	3,392	4,897	5	7,006			12,644	Brazil
		28,682	875	9,407	6	173	1,340	2,311	1	558			65	Chile
		19,009	614	10,270	71	2,176	688	1,678	2	2,286			357	Colombia
		2,155	77	1,135	6	201	54	174	1	774			132	Ecuador
		4,568	171	1,866			104	115						British Guiana
		173	10	74										Dutch Guiana
		344												French Guiana
		12,866	1,515	20,495	32	1,091	1,591	2,874						Peru
		16,826	1,798	16,097	10	154	493	1,002	11	9,875			87	Uruguay
		10,104	380	3,881	4	46	691	1,192	2	1,518			203	Venezuela
														Asia
		782	159	1,380			192	255	6	1,925				Aden
		271,661	1,655	17,955	97	2,696	867	1,545	273	113,846	42	14,028	16,154	British India
		4,169	241	2,985	32	1,298	125	250	79	39,189	6	2,004	10,795	Ceylon
		11,562	2,689	23,935	125	2,403	1,126	1,496	89	39,412			10,885	Straits Settlements
		7,206	421	5,711	2	60	236	450	6	7,438				China
		692	30	200										Chosen
		18,452	1,277	18,942	320	7,550	707	1,458						Java and Madura
		1,858	520	7,454	4	96	344	637	126	42,917			1,355	Other Dutch East Indies
		104												French Indo China
		2,276	932	9,876			822	1,292						Hejaz, Arabia and Mesopotamia
		2,374	334	3,330			196	282	3	3,632			900	Hongkong
12	16,830	47,790	5,535	65,694	1,264	10,912	3,565	5,928	4	4,110			64	Japan
		753	275	2,257			219	400						Kwantung
		8,855	772	9,272			437	915						Palestine and Syria
														Persia
		16,726	1,866	22,411	346	6,633	2,786	5,124						Philippine Islands
		143							12	3,685	15	5,010		Siam
			20	181			30	42						Turkey
														Oceania
		123,903	5,165	61,723	731	17,063	2,256	4,618	1,303	613,717	357	123,589	41,554	Australia
		412	8	92	1	17	8	15						British Oceania
		554	40	482	2	42	48	71			3	1,002		French Oceania
		46,346	10,041	142,104	385	12,017	8,275	15,657	508	251,842	66	22,044	15,844	New Zealand
		467	23	378			28	62						Other Oceania
														Africa
		120												Abyssinia
		679												Belgian Congo
		14,347	259	6,073			259	969	14	4,440	6	2,094	4,650	British West Africa
1	2,353	57,890	5,779	59,649	49	1,196	6,117	9,184	646	262,307	70	23,436	27,740	British South Africa
		2,539	341	3,709			749	1,255	45	14,109	12	4,098	11,583	British East Africa
		5,240	665	8,569	63	1,240	412	1,023						Canary Islands
		11,932	233	2,596	20	506	110	225						Egypt
		125												Algeria and Tunis
		2,632												Other French Africa
		73												Italian Africa
		8,352												Morocco
		202	51	583			59	105						Portuguese East Africa
		3,996												Other Portuguese Africa
		2,581												Spanish Africa
									2	2,408			772	Other Countries
26	$35,343	$6,012,906	166,865	$1,714,702	7,520	$184,926	118,996	$185,581	4,436	$2,294,802	602	$211,734	$298,553	Total

One Way to Cut Down Factory Sales Costs

Why Do So Many Dealers Quit? Just Because They Don't Sell Enough to Make Decent Living

THE president tells the sales manager a few plain truths in plain language about the profits lost on dealer turn-over. He advises expenditure of mental energy in finding ways to plug this leak.

By Harry Tipper

"SO you think our cars are costing us too much to manufacture. You can't make enough profit selling them at the price which competition will allow."

President Billings of the Planet Motor Car Co. was talking to his sales manager, James Chance, about the plans for next year's work and the question of prices was brought up by a consideration of the recommended models. The president was doing the talking.

"Did it ever occur to you that it is costing a devil of a lot to sell these same cars, Jim?"

"Sure, I know it is, but we've got to get the volume out and we've got to put a lot of sales pressure on to do it. I've been over the situation backward and forward and I can't see that it will cost us any less next year. In fact, I'm likely to need a bigger staff if the production plans go through."

"That's all right, Jim," replied the president, "but I have an idea that John used to bring up the same arguments about manufacturing. He always had a good lot of workers and was keeping his costs down to the lowest point. I guess he was right, too, from his standpoint.

"Did he stop then? He did not. We pointed out that we had to cut the price of the car $200 and we expected him to do it for us in the factory—and he did that very thing, most of the time. Why shouldn't we do the same thing with your end, Jim?"

"This is different. John could get in some better machinery and put more equipment to work so that the labor was cut down. I can't use machinery. I'm depending upon man power, pressure and the salesforce to do the job. If I cut the number of men, I'll lose sales. Can't stop the advertising either, that's just as important. Where can I cut?"

"You don't quite get me yet, Jim. He didn't cut down the production of cars when we asked for a cut in price and we don't want any cut in sales. But that doesn't mean that we can't cut the cost of sales.

Used Cars Eat the Profits

"Take our dealers. How many have we? Approximately 200, I think. Of course, we should know without any approximate estimates. We don't approximate in manufacturing. How many cars do these dealers sell apiece on the average?"

"According to our production they sell about fourteen each," answered Jim. "Some of them sell a lot more than fourteen and a good many sell less."

"How does a dealer make money on the sale of fourteen cars per year?" demanded the president. "That's only a business of $28,000. There's not much in that for any man. Jones was telling me the other day that over 15,000 dealers went out of business last year or out of the field. Why did they go out? This is a good business. Why should a man, who's got his money in it, quit? What's the catch? There's a colored person in the woodpile somewhere."

"It's this used car business," said Jim. "They lose money on the used car end and get disgusted. Most of our dealers carry other cars, of course, but at that I guess a lot of them are not making any money."

"Yes! But why guess? Shouldn't we know all about those fellows? Doesn't it cost us some money when we lose a dealer and have to get a new one? If our dealers don't make money, where do we get off?"

"We're getting our money all right and they're selling the cars."

Dealers Must Make Money or Quit

"That doesn't answer me at all, Jim. If the dealers who sell our cars can't make any money out of them sooner or later they'll quit selling them and we'll have to get new ones with the same old trouble staring us in the face.

"I had a letter from Smith the other day. You know, Smith used to be a distributer of ours and then went over to the Sunshine. Said he was about ready to quit the business. He said he had changes among thirty-five of his dealers this year and he figured it cost him $750 apiece to change. Said he couldn't make a profit himself under those circumstances. Said very few of the dealers were making money and the manufacturer should wake up to the difficulties and costs. If it cost Smith $750 per dealer, I'll bet it cost us $1,000 to make a change. How many changes in dealerships did we have during the past year?"

"Why, I think there were eighty; I don't remember exactly."

"There we are again. We have too much 'just thinking' things are thus and so in our sales work. You have the figures, all right, but they evidently are not of great importance or you would have remembered them. Well, eighty dealers at $1,000 per throw is $80,000 it cost us because the dealers gave up our franchise and we had to find new ones.

"How much of that $80,000 is necessary? If we were dealing with it as we should, how much could we save? If all our dealers made money, how many of them would be ready to give up the franchise for some grievance? Of course, the used car problem is one of the big problems with the dealer, but there are a good many other things affecting the dealer's business and, consequently, costing us a good deal more money.

"Suppose we could cut that $80,000 we spent on getting dealers to $40,000. That's 10 per cent on $400,000 and would help a lot in keeping us in the right place at any time. That isn't the only point, however. There's the question of resale, which, as you have told me so often,

depends on the service of the car. Of course, every buyer expects the car to run and without any expense for repairs or adjustments for some time any way.

"Why shouldn't he? He's paying a good price for a good article and it's useful for service only. He expects and should have up to the minute service whenever he buys a car, but I don't believe he gets it right away in the eighty towns where we changed our dealers this year. The thing is unreasonable on the face of it.

"Then there's another thing. Why is it that our dealers only average fourteen cars a year? Some of these manufacturers are getting a much higher average on cars in the same class as ours. Even if they weren't, there's something wrong with that situation. I'm inclined to think that if we could increase that fourteen to twenty per dealer, we'd get our additional production with much less cost per unit than we will on our present basis.

"There must be some answer to this kind of a problem. I don't know the answer and these remarks are no criticism of your work, Jim. You've done well and we've made a nice profit, but that's the way the problem runs.

"Probably we can make some manufacturing economies here and there, but the real job of economy is up to the marketing work. More cars per dealer; more profit per dealer; less turnover of dealers and dealers selected in just the right places with the right organization.

"That means knowing a whole lot more about the dealer than we do now and it means getting acquainted with his troubles so we can help ourselves by knowing what he is up against. I tell you, I'm worried, not about production costs or getting enough cars distributed, but about this dealer who makes too little money, sells too few cars and goes out of business so easily.

"He's the man we must work with, because he's the meat of this whole problem. Don't spend much time worrying about next year's models or prices, Jim. Put that think-tank of yours on this dealer and keep it there until we find some kind of answer to the situation. That'll be the biggest year's work we can do."

Dodge Brothers Use Progressive Crating System for Export

CRATING and shipping of cars for export are now being carried out by Dodge Brothers in a section of the ordnance plant erected by the company during the war.

Cars assembled according to the particular requirements of the country to which they are to go are driven under their own power from the main plant to the export department. There the cars are dis-assembled for crating, the gasoline and oil drained off, and all nickeled parts and the nameplate sprayed with non-rust fluid to preclude possible exposure to climatic conditions. The cars undergo duplicate inspections, first as they are assembled at the factory, and secondly as they are dis-assembled at the export department and crated away. As rapidly as crated they are picked up by a large traveling crane and set down on railroad flat cars which enter the building on a spur track.

Precautions Against Careless Handling

Cars are built into the export crates in such manner as to avoid any possibility of shifting regardless of the way the crate is handled. Care is taken to apprise the shipping agent of the position of the car by markings indicating bottom and top, the markings being in English and the language of the country to which the shipment is going. If, however, the crate is carelessly handled, the car is so braced that it will remain stationary in any position.

As an extra precaution against shipping or storage in wrong position the company is now using a new stencil employing the colors blue and white, upon which the company has standardized all its outdoor advertising. This is applied to both sides of the crate, the blue forming the background and the name "Dodge Brothers" in white. The stencil is about nine feet by two and in addition to helping keep the shipment in proper position has advertising value.

Crates are built sectionally at the ordnance plant, incidentally the only machinery in the plant being devoted to this. Timber and boards are all cut to size by machinery, the sides and ends being assembled by hand in special forms. The props and bracing timbers are mortised out, fitted and nailed together by special machines. These are nailed into the sides of the crate as they are fitted around the car. Heavy waterproof paper is used to line the inside of the crate and a strip of this is also laid across the top as extra protection.

Details of the crating have been worked out gradually by the department and are now regarded as having reached a point where every normal contingency has been guarded against. Four by four strips have taken the place of two by four, experience having shown that in some cases the lighter timber was unsatisfactory. These again have had extra strips added at the sides to withstand pressure when cars are aboard ship.

The company employs about 80 men in the crating and shipping of export cars. At the rate of present shipments these represent about one car shipped per day per man. The work is handled progressively.

Following the dis-assembly the car is laid out for crating according to its type and the country to which it is to be shipped. Countries like Australia, which take only the chassis and build the bodies, receive automobiles crated two together. Where the complete car is shipped there is only one to the case, the closed models being shipped in special cases and with special packing for protection. On the regular open models the wheels, top, windshield, tools, battery and other equipment are fitted into special compartments, where they are held firmly through the trip.

EXPENDITURES totaling $205,890 of national highway forest funds for the construction of about 12 miles of highway in New Mexico between Canoncito and Pecos have been approved by Secretary of Agriculture Wallace. This money was made available for roads serving the national forest and for roads within or adjacent to the forests which are of primary importance to the State, counties, or communities.

The road in question is a link in the main State highway system which is used by trans-State auto travel to a greater extent than any other road in the State.

AUTOMOTIVE INDUSTRIES
The AUTOMOBILE
Reg. U. S. Pat. Off.

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Standardization and Individuality

THE salesmanager has often been accused of opposition to standardization. He is frequently cited as one of the main obstacles to further adoption of simplified practice.

True, the salesmanager demands that his car have individuality; that it have definite "selling points"; that it have a number of features to differentiate it from other vehicles in the same price class. But standardization touches these demands very infrequently. The salesmanager is more interested in body lines than in battery flange mountings. He cares more about upholstery than about threads on a radiator cap.

Many standards in the S. A. E. Handbook could be adopted more widely with considerable advantage to the manufacturer in both production and service and without the slightest opposition from the sales department. A recent survey, for example, indicates that something like thirty different sizes of radiator caps are now in use. Radiator caps might be made interchangeable to a large extent without affecting their appearance or efficiency at all. A range of five or six sizes at most would seem to be adequate for all practical purposes.

There has never been any tendency to attempt standardization of exterior parts of the car or of any features upon which depends the individuality of the particular make. Today the growing importance of service is placing new emphasis on the value of standardization, particularly in its effect on automobile operating costs.

Farm Markets Not Equally Good

A GOOD many farmers are buying motor vehicles and have been for several months. Many more will buy before the close of 1923, but not all farm markets are equally good. There always are some buyers in all districts, but the number varies with the size of the harvest. Now is the time sales managers should be studying crop reports and preparing to take advantage of the best bets a couple of months from now. The cotton belt, for example, has bought automotive products liberally for nearly a year, but it's never safe to count cotton until it's baled. The outlook in some sections is very dubious. Some sections of the West have been infested with caterpillars and it's quite possible those caterpillars may kill off a lot of automobile sales.

Carbon Ranges in Steel

IT is generally admitted that the S. A. E. iron and steel specifications have been of great benefit to the industry, but at the same time it is realized that they are by no means perfect and that revisions should be made from time to time as experience in their use indicates. One of the items in the steel specifications that has given rise to complaint at times is the carbon content or, rather, the range of the carbon content.

At the present time the carbon ranges, with one or two exceptions, are equal to ten points; that is, the steel may have up to five points more or five points less than the nominal carbon content and still meet the specifications. So far as the steel user is concerned, he would prefer to get steel with a carbon content exactly equal to the nominal value, but he realizes that the cost of producing such steel would be prohibitive. Therefore, a certain tolerance is allowed, the same as in connection with the dimensions of machine parts for interchangeable work.

There is one difference, however, between tolerances for machine work and the carbon ranges of the present S. A. E. steel specifications. Taking a certain class of fit, say the running fit, the tolerance is varied with the nominal dimension and also with the quality of the work. The carbon ranges of the present S. A. E. steel specifications, on the other hand, do not vary at all. The range is ten points whether the nominal carbon content is fifteen points or fifty and whether the steel is of the plain carbon or the alloy type.

There can be no question that a range of ten points represents a much wider tolerance for a low than for a high carbon steel, in that the proportional variations in the mechanical properties and the variations in the requirements with respect to heat treatment corresponding to such a difference in carbon content, are greater in the case of the low carbon steel.

Most specific complaints with respect to too wide a carbon range have been in connection with low carbon steels of the case hardening type. This supports the view that the range in carbon should vary with the nominal carbon content.

Carbon content in steels corresponds to dimensions in mechanical work, and it is the universal practice to increase the tolerance with the nominal dimension, though not in the same proportion. Alloy steels, on the other hand, correspond to a high quality of mechanical work and warrant paying the cost of a lower carbon range than that suitable for plain carbon steel of the same nominal carbon content, for the reason that alloy steels are more expensive in any case and are used only for the more exacting classes of work.

The above reasoning leads to the conclusion that a rational system of carbon ranges would provide the smallest range for low carbon alloy steels and the highest for plain carbon steels of high nominal carbon content.

Encourage Accessory Sales

CAR manufacturers benefit materially by having their dealers handle automotive equipment and accessories. The idea that a retailer should devote himself exclusively to the sale of vehicles is rapidly passing. The tremendous number of cars already in use make the accessory market comparatively stable, so that equipment profits may keep the dealer in business when demand for new vehicles falls off.

By building up a good accessory trade, the dealer can make himself better able to weather business storms than if all his eggs were in the basket of passenger car and truck sales. Manufacturers should recognize this fact clearly, particularly in view of the difficulties encountered in getting enough properly financed dealers.

One of the best ways to obtain such dealers is to encourage present retailers to handle equipment and accessory lines which will bring profits and enable them to increase their resources.

Automobile manufacturers need in their retail organizations men who are sound merchants, individually strong in their respective communities and able to take care of themselves under any economic conditions. The dealer with opportunities for profit on automotive items other than vehicles has a good chance of growing into such a retailer.

He may be less responsive to every small wish of the car manufacturer, because he is not wholly dependent on car sales for his livelihood, but he will be a more able and aggressive sales agent and will dispose of more cars in the long run. The aggressive selling which results from independence of mind and bank account more than offsets any slight loss which might accrue from a failure to agree with the car manufacturer in every detail of policy. The chief thing the car builder wants is more sales and that is what he will get from the firmly established dealer who is making a profit on a line of automotive products.

Sales Appeals to Women Pay

MEN may talk much more learnedly than women about the motor cars they drive, trying to give the impression that they are thoroughly familiar with the interior furnishings and decorations as well as technical details, but in the average American family the women have at least a 50-50 voice in determining what make of car shall be purchased.

A good many persons in the industry are alive to this fact and are framing their sales appeals accordingly, but there are many more who don't seem to have sensed this phase of the psychology of car buying. The ordinary man doesn't want any one to think he's bossed by his wife, but most women have the faculty of getting their own way by letting their husbands think they're always the masters.

The man who protests most loudly that he wouldn't drive anything but an open car, but whose wife fancies a closed model, usually compromises on a sedan, provided the family exchequer will permit it. Women are chiefly responsible for the increased demand for closed cars.

The Reo dealer in Columbus, Ohio, has capitalized cleverly the appeal to women in a series of twenty 5-in. single-column advertisements run on the woman's page of one of his local papers. Each ad contained merely the picture of some Columbus woman who drives a Reo, with her picture at the steering wheel, her address, a brief statement of her opinion of her car, and a facsimile of her signature.

A lot of selling appeal to women was crammed into those small ads.

Four Wheel Brake Opinion Divided

OPINION in the industry on the subject of four-wheel brakes shows wide divergence. Those companies which propose to install them contend that they have become essential to safety in dense traffic. Those which are not going to use them protest that brakes on two wheels are ample.

Buyers of automobiles will hand down the verdict. If they insist on four-wheel brakes, or show a preference for them, they'll get them on all cars sooner or later.

The effect of the added cost made necessary by the expense of installing four-wheel brakes also remains to be determined. Upward price revisions probably will be made on most of the new models, whether they are equipped with the new brakes or not, but it will be the part of wisdom to keep these increases as small as possible.

Automobile buyers want quality, but they want the most they can get for their money.

First Week of June Shows Big Schedules

Manufacturers Operate Along Level of Latter Part of Preceding Month

NEW YORK, June 18—Reports for the first week of June indicate that production of passenger cars and motor trucks is keeping up to the level maintained the last week of May, when a quickening pace as compared with the earlier part of the month was manifested. It is not thought likely, however, that the shorter working month, with a sequence of unusually high production records behind it, will reach the 405,000 mark established in May.

Sales are taking a greater swing toward agricultural districts and whatever slowing down in demand is evidenced in the larger cities is being made up to a large extent by more active buying in farming regions. This is especially true of open models which continue their popularity among country buyers although stocks have accumulated in dealers' hands elsewhere. Measures are being taken by some manufacturers to focus greater attention on the merchandising of these models and so reduce the stocks to a more comfortable size.

Stress has been placed on the advantages of the closed car with the result that dealers have many unfilled orders for this type which manufacturers cannot meet through the inability of body building plants, working at top speed, to promise immediate deliveries.

Some Farm Sections Good

Better conditions among farmers, particularly in those sections of the country where the aftermath of the war was felt most keenly, are being reflected in greater interest in motor vehicles and the resultant forward movement in sales. In Iowa, one of the States where the depression was severe in its effects, farmers have met their obligations and conditions are assuming a more encouraging aspect. The favorable prospect for good crops is as important a factor in the more cheerful buying disposition of the farmer as the greater amount of money he has on hand today with which to make purchases. In some States, however, backward collections show less satisfactory conditions than are to be met in Iowa.

The major part of the sales of cars and trucks during the next few months

(*Continued on page* 1360)

Business in Brief

NEW YORK, June 21—The industrial situation last week showed no decided movements from the week previous. Such slight changes as occurred were in the nature of readjustments to seasonal and other conditions. There is increased conservatism in placing advance orders, and a tendency to go slow until the future is clearer.

The steel industry maintained a heavy production rate, although slightly smaller than of the week previous. Unfilled orders declined some 307,000 tons, indicating the general character of the situation. Prices of scrap iron weakened, but finished steel remained unchanged.

Excessive rains have done some damage to the cotton and wheat crops while benefiting the crops of the Middle Atlantic and Northern Pacific regions. The purchasing power of the Western farmer remains low in relation to other groups. Reports of farm labor shortages are beginning to come in.

Building continues at high level in spite of the curtailment, due to high cost of materials and labor. New York City is foremost in showing the effects of this condition.

Car loadings for the week ending June 2 aggregated 932,041, a decrease of 81,988 cars from the week previous. Undoubtedly some of this decline may be attributed to the holiday which intervened. The increase of forest products loadings, which consist mainly of building material, indicates heavy building in spite of the drawbacks mentioned above.

With the exception of one day, the stock market for the week was extremely dull. The public did not enter to any great degree, and such activity as was noted was professional. The bond market likewise remained quiet

Elgin Plans Production in New Factory in Fall

INDIANAPOLIS, June 20—Work of remodeling the new plant recently acquired by the reorganized Elgin Motors is progressing here under the direction of President Joseph McDuffee. General offices are being laid out in the two-story plant, and the floors of the large assembly building and stock rooms are being arranged for active production which is planned for early fall.

Announcement of the design of the new Elgin and of the staff of the factory and general offices will be made shortly, it is expected.

Reorganization Plan Holds Up Wills Sale

Postponement Taken to July 3 to Allow More Creditors to Submit Views

DETROIT, June 19—The sale of the C. H. Wills & Co. property was postponed today to July 3 to give more time to the working out of reorganization plans. Though a large number of replies from creditors on the reorganization plan proposed last week have been received, there still are many creditors to be heard from and the plan will not become effective in any form until it is certain it meets the approval of all interested parties.

Plan May Be Changed

Although it is considered certain that the plan as submitted by the reorganization committee will be adopted in much the present form, there are likely to be changes in certain particulars and additional time has been found necessary to consider these. Once the financing plan is completed the company will be taken over and preparations already are being made to proceed on a greatly increased manufacturing scale.

The reorganization plan proposes to form a corporation with authorized capital of $5,000,000 7 per cent prior preferred, cumulative after Jan. 1, 1924; $5,000,000 6 per cent first preferred, cumulative after July 1, 1924; $5,000,000 6 per cent second preferred, non-cumulative but convertible into common at $30 a share, and 400,000 shares of no par common. It is proposed to give merchandise creditors 100 per cent of their claims in first preferred. The revolving credit holders, totaling $4,400,000, are to get 50 per cent, or $2,200,000, in second preferred.

First preferred shareholders are to get 40 per cent of their claims in second preferred, taking $800,000.

Total Cash $3,845,000

It is planned to sell for cash by a banking syndicate $587,000 prior preferred, $51,000 second preferred, and 300,000 shares of common for $1,287,000 making total cash from stock sales of $1,925,000. It is also proposed to raise $1,920,000 cash by holders of the $4,400,000 revolving credit, and present first preferred stockholders subscribing to new prior preferred. This will give the new corporation a total of $3,845,000 cash.

After making these changes with creditors and present stockholders and selling new stock as outlined, the outstanding capital will be as follows: Prior preferred, $2,507,000; first preferred, $4,000,000; second preferred, $3,051,000, and common, 300,000 shares.

750 S.A.E. Members Meet at Spring Lake

Attendance Second Best in History—Report Made on Society's Progress

SPRING LAKE, N. J., June 21—More than 750 members of the Society of Automotive Engineers from all sections of the country are attending the Summer Meeting which opened here Tuesday. In point of attendance, the gathering is the second largest in the history of the organization.

The technical sessions did not begin until this morning and members have had little to distract their attention from golf, tennis, bathing and dancing.

Resort Proves Popular

All the members are much pleased with the provisions made for their comfort and pleasure while here. Almost without exception they agree that Spring Lake is the best meeting place ever selected with the possible exception of White Sulphur Springs. Hotel accommodations are ample and comfortable. The International Motor Corp. has provided a ten-minute bus service to the golf course and the tennis courts.

The attendance is highly gratifying to the executives of the Society because it had been predicted that fewer members would come to the Atlantic seaboard for a meeting. The S. A. E. special train on the Pennsylvania Railroad which arrived Tuesday morning was made up of ten sleepers, four of which came from Detroit, two from Cleveland, one from Indianapolis and one from Chicago. Fully as many more members from the Middle West drove to Spring Lake.

An unusual number of factory executives, especially from eastern cities, are attending the meeting in addition to their engineers. They are highly pleased with the general business conditions of the industry and report little slackening in demand for their products.

Standards Committee Meets

Little in the way of professional business had occupied the attention of the members until this morning. The Standards Committee met at noon Tuesday and completed its work before dinner that night. Comparatively few changes were made in the printed report which was accepted at the business session of the Society that evening.

President H. W. Alden presided at the business session. He declared that the three major problems before the Society were highways, transportation and production. He made the interesting announcement that the S. A. E. is getting into closer contact with the American Electric Railway Association and that it expects to hold a joint meeting with the street railway executives at Atlantic City in October. This convention will give another opportunity for promoting a closer understanding.

The second production meeting of the Society will be held in Cleveland in the fall. It will be similar in character to the highly successful session held in Detroit last October.

C. B. Whittelsey, the treasurer, reported that the Society now is definitely out of red ink and at the close of May had a small balance of unexpended income as compared with a deficit of $18,360 at the same time last year. The assets include $24,275 in cash, $35,000 in accounts receivable and $96,550 in securities. Total assets are $183,693 as compared with $180,127 on the same date in 1922.

The membership of the Society on June 1 was 5386 as compared with 5380 on the same date last year. There are, in addition, 244 enrolled students. Lon R. Smith, chairman of the Membership Committee, pointed out in making his report that the Society wants as large a membership as possible but that the standard must be maintained.

President Alden, in commenting on the treasurer's report, said that the finances of the Society now are in such condition that it can afford to begin by the end of the year some additional work which it has been anxious to undertake.

L. C. Hill, assistant general manager, reported for the Meetings Committee. He said that all the general sessions had been well attended and of unusual technical interest. Speaking of the present Summer Meeting, he said that it was surprising that one-third of those present came from Cleveland and Detroit. He reminded members that the Annual Meeting next year will be held in Detroit

(*Continued on page* 1352)

Extensive Ownership of Cars in South America Depends Upon Development of Countries' Resources

By Roger N. Lagow,
South American Representative of the Hupp Motor Car Corp.

DETROIT, June 20.

CONDITIONS surrounding the sale of automobiles in South America are such that only a relatively small number of manufacturers can hope to do good volume business for some time to come, the main reason being that there is a scarcity of business houses in most countries which have the combined requisites of proper experience and adequate lines of credit.

American manufacturers who are doing large business in South America today are doing it because they have spent years in developing the market for their product and in schooling their representatives to take advantage of its possibilities. For most companies it has been a long and discouraging experience, but they are now reaping the reward of perseverance in steadily growing business.

Any manufacturer who is entering this market for the first time must be prepared to face a greatly similar set of conditions as faced the first entrants, though a great deal of pioneering has been done. Each manufacturer must be prepared to go through the experience of developing his dealer in the fine points of merchandising cars, and this is something that is seldom accomplished with the average South American dealer inside of two years.

There is no buying of automobiles in South America by the great bulk of the population as we have it in the United States, and the time when there will be ownership of automobiles by the people as a whole is many years removed. Economic and social conditions are such that the field of buyers is limited to practically two classes, the political element and the business and professional men. The average man has no thought of ever owning a car because it is something far removed from his range of possibilities under present conditions.

Before there can be any large ownership of cars by the people generally the resources of the many countries will have to be developed. Should American capital determine to cultivate rubber in the Amazon River district it would be a tremendously important factor in the development of Brazil and its effect would be spread to other countries, but I do not think that is likely to happen.

Though the market for cars is limited to a definite buying class still there is a very good volume of business to be obtained when the dealer has become established and knows how to sell. There is one way in which the South American dealer differs from his American cousin and that is when he once takes on a certain line of cars nothing will make him change. Once a factory signs a dealer it may be assured of keeping him. If he becomes a good dealer it will be because the factory has worked with him along the proper lines.

Factories which have opened branches in important South American cities are doing good business largely because they have Americans in charge. American dealers in South American cities are also doing large business. The average South American dealer is handicapped to a considerable extent by the unfavorable attitude of bankers, and in this connection it might be stated that the American branch banks are worse than the South American. The general impression is that the American branch banks are in business for no other purpose than to exploit the countries and as a consequence are in disfavor.

Car Accident Fatal to Walter Flanders

His Automobile Overturns While Trying to Pass Another in Virginia

DETROIT, June 18—Walter E. Flanders, chairman of the board of directors of the Rickenbacker Motor Car Co., is dead from injuries received in an automobile accident near Newport News, Va., Saturday. Driving from his country estate at Williamsburg, Va., to Newport News with a party of friends, the car in which he was riding overturned while trying to pass another. He was the only one injured, dying a few hours later in a hospital at Newport News.

Mr. Flanders was fifty-two years of age and had been identified prominently with the automobile industry since 1905, when he joined the Ford Motor Co. as production manager. Selling crankshafts for a Cleveland concern, he so impressed Henry Ford that the latter engaged him at a time when Ford was ambitious to turn out 10,000 cars in a year, a great feat at that stage of the industry.

Performed Feat for Ford

He was promised a bonus of $20,000 in addition to his salary if he turned the trick. Through his tireless energy, he completed the 10,000 cars within the specified time, but without much margin to spare, the mark being reached two days before the end of the year.

Leaving Ford, he joined forces with B. F. Everitt and W. E. Metzger in organizing the E-M-F Co., making a medium priced car, the E-M-F, to which later was added the Flanders at $750. So successful was the company that the Studebaker Brothers of South Bend tried to buy it.

A deal was arranged, however, under which the E-M-F Co. made the cars which were marketed by the Studebakers. In 1909 the Studebakers served notice that they would not accept any further deliveries of E-M-F and Flanders cars, whereupon Mr. Flanders organized a selling staff himself.

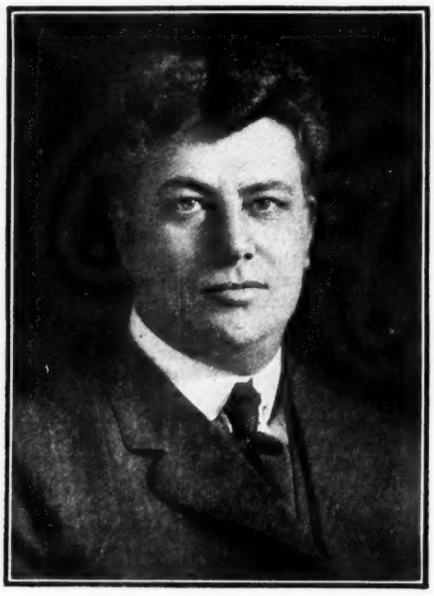
The Studebakers went to court about it, trying to stop the organization, but were beaten in the legal skirmish. They then bought out the interests of Mr. Flanders and his associates and installed the former as general manager.

Gets Maxwell Stock

Later Mr. Flanders rejoined Metzger and Everitt, who had organized the Everitt Motor Car Co., which later was taken into the United States Motors, the big holding concern of the early days, Mr. Flanders and his associates being given stock in the Maxwell Motor Co., Inc., in return for their holdings in their own company.

Mr. Flanders was given the task of putting the concern on its feet, which he did by junking such well-known makes of cars as the Maxwell-Briscoe, Stoddard-Dayton, Brush, Columbia-Knight and Alden Sampson, and concentrating on one car, the Maxwell. As chief executive of Maxwell, he lived up to his early reputation.

It was not until the Rickenbacker Motor Co. was formed that he returned to the industry with his old associates, Metzger and Everitt, and since the Rickenbacker was launched, a year and a half ago, he served as chairman of the board.



Walter E. Flanders

Chairman of Rickenbacker board and long identified with industry who died from injuries received in an accident

Mitchell Trustee Lawyer Is Not Allowed to Serve

MILWAUKEE, June 18—The appointment of James D. Shaw of Milwaukee as attorney and counsel to Herbert F. Johnson of Racine, trustee of the bankrupt estate of the Mitchell Motors Co., Inc., has been set aside by the Federal Court here, the court upholding the objection of certain creditors that Shaw is a member of permanent counsel for the Milwaukee Electrical Railway & Light Co., one of the creditors.

This decision was based on a rule of long standing that an attorney representing creditors of a bankrupt estate shall be disqualified to act as attorney for the trustee of such estate. It was reported that certain creditors would object to the confirmation of Herbert F. Johnson, receiver, as trustee, because he is a director of a Racine bank which has a large claim against the Mitchell company, but this has not materialized.

FORD MAY OUTPUT 201,038

DETROIT, June 16—Complete figures on Ford output in May, combining domestic and export business, show a total of 201,038 units, divided as follows: Ford cars and trucks, 189,177; Fordson tractors, 11,083, and Lincoln cars, 778.

Palmer Put at Head of New Rubber Body

Representatives of Forty Makers Appear When Association Is Organized

NEW YORK, June 18—Harvey S. Firestone's call to form a new association of rubber manufacturers brought together representatives of about forty companies at a meeting in the Commodore Hotel last Friday, when the organization of the American Rubber Manufacturers, Inc., was effected.

The platform adopted was the encouragement of the plan to have America produce its own rubber, but, failing in this, the development of other sources of supply which will free American manufacturers from the British restriction act.

Firestone a Director

While Firestone himself played a leading part in bringing together those interested in the formation of an association which will admit only manufacturers, he declined to accept any executive position other than that of director.

T. R. Palmer of the Continental Rubber Works of Erie, Pa., was elected president; C. E. Murray of the Murray Rubber Co., Trenton, N. J., treasurer, and O. M. Mason of the Mason Tire & Rubber Co., Kent, Ohio, secretary pro tem. There will be nine directors, but the meeting selected only Palmer, Murray and Mason, officers, and Firestone and L. A. Brown of the Firestone-Apsley Co., Hudson, Mass.

It was stated that the new organization will not be antagonistic to the Rubber Association of America. During the meeting some of the speakers expressed the opinion that it might be possible to accomplish the desires of manufacturers through the Rubber Association of America "if sufficient pressure were brought to bear," which would make the formation of a new association unnecessary. It was the sense of the meeting, however, that "the time had arrived for independent action, and that another association should be formed."

Palmer Outlines Plans

Following the meeting, Palmer outlined the plans of the association as follows:

It is our purpose to look after the interests and problems of the rubber manufacturers. We believe our interests will be dealt with more satisfactorily through an association composed exclusively of rubber manufacturers and not affected by outside interests.

Our aims will be for the solution of problems that confront the rubber manufacturer. We believe in liberal production and free movement of crude rubber, unhampered by legislation that creates an artificial price for

(*Continued on page* 1353)

36 States This Year Have Gasoline Taxes

Seventeen Commonwealths Join Those Where Levies Were in Force in 1922

NEW YORK, June 18—Thirty-six of the States in the union now have gasoline taxes, an increase of seventeen this year, while eight of the other commonwealths which have been collecting from the motorists for fuel consumed have increased the fees. Speaking statistically, 73 per cent of the States have gasoline taxes and in these States there are 5,931,906 motor vehicles registered.

A report on the gasoline tax situation was today made public by Harry Meixell, secretary of the Motor Vehicle Conference Committee, which is composed of representatives of the American Automobile Association, Motor and Accessory Manufacturers Association, National Automobile Chamber of Commerce and the Rubber Association of America.

Most Sessions Ended

With all regular sessions of State Legislatures scheduled for 1923 adjourned, except those of Illinois and Wisconsin, Alabama, which is recessing until July 10, and Georgia, which will not convene until July 5, Meixell feels that now is the time to report on the fuel tax legislative efforts of forty-four States.

The seventeen States which passed gasoline tax laws this year are as follows: Alabama, 2 cents; California, 2 cents; Delaware, 1 cent now and 2 cents after Dec. 31, 1923; Idaho, 2 cents; Indiana, 2 cents; Maine, 1 cent; Nevada, 2 cents; New Hampshire, 1 cent now, 2 cents after Jan. 1; Oklahoma, 1 cent; Tennessee, 2 cents; Texas, 1 cent; Utah, 2½ cents; Vermont, 1 cent; Virginia, 3 cents; West Virginia, 2 cents; Wyoming, 1 cent, and Wisconsin 2 cents. The Wisconsin bill now awaits the signature of the Governor.

Those to increase the fees are: Arkansas, from 1 to 3 cents; Colorado, from 1 to 2 cents, after July 29; Florida, from 1 to 3 cents, after July 1; Maryland, from 1 to 2 cents, after Jan. 1 1924; Montana, from 1 to 2 cents; North Carolina, from 1 to 3 cents; South Carolina, from 2 to 3 cents; South Dakota, from 1 to 2 cents, and Washington, from 1 to 2 cents after Jan. 1.

No Change in Some States

The States which had the tax and which did not change it are as follows: Arizona, 1 cent; Connecticut, 1 cent; Georgia, 1 cent; Kentucky, 1 cent; Louisiana, 1 cent; Mississippi, 1 cent; New Mexico, 1 cent; North Dakota, 1 cent; Oregon, 1 cent; Pennsylvania, 1 cent.

In all something like 100 bills were filed in the various legislatures, but some of them fell by the wayside. All of the States did not respond to the appeal for this sort of tax.

Says the Motor Vehicle Conference Committee on this point:

The 1923 session of the Michigan legislature enacted a bill providing for a 2 cent tax, but the Governor vetoed the measure. Likewise the Governor of Arizona vetoed a bill which aimed to increase the present 1 cent tax to 3 cents a gallon.

In Massachusetts a law imposing a 2 cent tax was passed by the legislature and approved by the Governor but in response to a demand on the part of the requisite number of citizens a popular referendum on the law will be held in 1925 which therefore automatically suspends the collection of the tax until the people have expressed their will upon it.

The Ohio lawmakers, after introducing and considering seven gasoline tax bills, decided to appoint a special committee to investigate the entire subject and report their findings and recommendations to the next sessions of the legislature. In Minnesota, on the other hand, a law was passed providing for an amendment to the State constitution so as to make possible and legal the imposition of

(*Continued on page* 1357)

TRUCK SHOW PLANNED FOR FALL POSTPONED

DETROIT, June 16—The motor transportation show planned by Motor Truck Industries, Inc., has been deferred by the association indefinitely, and it is likely that a date in the spring will be selected rather than in the late months of the year.

The principal reason assigned for the postponement was the shortage of time in which to complete details. Questionnaires to prospective exhibitors also indicated that a spring show was preferred by a large number.

The show was scheduled to be held in Chicago, Sept. 1 to 7.

Premier Plans to Ship First Taxicab in July

INDIANAPOLIS, June 20—Premier Motor, Inc., the newly reorganized Premier concern, expects to begin making deliveries of its new taxicab early in July, and in a few days will have an increased force to turn out the cabs.

The five-year contract held by Premier with a New York taxicab company calls for 1000 vehicles the first year, and a 10 per cent increase each year thereafter.

I. F. Schaeffer, vice-president and general manager, says that material and parts contracted for the taxicabs are coming through on schedule and that three or four cars a day will be turned out when production gets under way in July.

The regular line of Premier passenger cars is being continued.

Lincoln Using Part of Factory Addition

Greater Production Efficiency Possible Through Reassignment of Space

DETROIT, June 16—The addition to the Lincoln Motor Co. division of the Ford Motor Co. is completed to the extent that the motor assembly department has started moving in. This is the first of several changes that will reorganize the various departments and the place they occupy in the building arrangement in order to increase production efficiency. Other departments will be moved as rapidly as the new building is ready for them.

Completion of the new building will not mean a large increase in total cars built, although it will result in a stepping up from the present 25 to 30 cars daily to around the 35 daily mark. Work that has formerly been done outside the plant will be handled by the company itself. A feature of the new layout is the building of a track 3082 ft. long on which a speed of 60 miles an hour can be made on the straightaway. The track will be used in testing out cars.

Orders for the Lincoln are reported by the company to be still three months in advance, but despite this no attempt will be made to push production beyond the 35 a day figure. Many sales have been lost, the company reports, because of the delay in deliveries. No price changes are expected because of economies in manufacturing effected, the company compensating for these by building additional equipment into the car. Production will never be considered in the manufacture of the Lincoln, the company reiterates.

Packard Using All Plant Facilities to Build Cars

DETROIT, June 15—Plant facilities of the Packard Motor Car Co. are now being devoted exclusively to the manufacture of passenger cars, the development of the new single-eight, with the single-six, requiring all the manufacturing resources of the company.

In bringing out its single-eight and also the six, the company has gone in for body manufacture in its own plant on a much larger scale than formerly, and to a large extent is manufacturing all of its own bodies of certain types.

PARKER TRUCK REORGANIZED

MILWAUKEE, June 18—Reorganization of the Parker Motor Truck Co., Milwaukee, following the death of Frank H. Parker, has been completed with the incorporation of a new concern of the same name under the laws of Wisconsin by John E. Tracy, vice-president and general manager. The capital consists of 2000 shares of common stock without par value.

S.A.E. Clarifying Its Highway Policy

Tests Are Being Undertaken on Which Decisions Will Be Based

SPRING LAKE, N. J., June 21—Important progress in clarifying the policy of the S. A. E. in relation to highways was made at a special meeting of the Highways Committee, held on the veranda of the Hotel Monmouth yesterday afternoon. Ultimate decisions will be based largely upon exhaustive tests which now are being made by Prof. G. H. Gottschalk of the Bureau of Standards in cooperation with the Bureau of Public Roads, the S. A. E., the N. A. C. C. and other automotive interests The three main problems for consideration are:

1. Effect of road conditions on the cost of operation of motor vehicles.
2. Effect of type of road surface on the safety of traffic.
3. Information which may assist in the design of vehicles.

Aims of Present Tests

The tests which have been undertaken are designed to obtain a measure of the relative effect on roads by various vehicles; to obtain definite information upon which to base motor vehicle legislation; to obtain special information of value in the design of motor vehicles and trailers; to obtain information of value in the design of tire equipment.

Prof. Gottschalk explained that the tests were designed to give State legislatures an authoritative basis for considering road destructibility and permit them to fix penalties on a scientific basis. They will be given important data on the relative importance of sprung and unsprung weights.

Would Fit Truck to Road

The main purpose of the tests is to promote the greatest economy in truck transport by fitting the truck to the road. When proper weights have been determined, penalties should be exacted which will keep greater weights off the highways. There now are no definite data on the question of how good the public can afford to build roads. Gottschalk pointed out that the political factor is more important than anything else.

President Alden contended that up to this time motor vehicle builders have been on the defensive, and that hereafter highway engineers should be placed on the defensive. Subjects for consideration should be what roads are doing to trucks, and whether the automotive industry is justified in making radical changes in design to keep down impacts.

Gottschalk announced that Professor Agg is making important tests at Iowa University to determine the effects of different road types on gasoline consumption. The work done thus far shows surprising differences. Other tests are under way to show the effects of different road surfaces on tires. One factor in this consideration is the effect on the road of oversized tires with normal loads. It was brought out that there is not now an adequate definition of what constitutes a cushion tire.

B. B. Bachman, chairman of the committee, presided at the meeting and expressed much gratification at the interest shown.

CLOTHES SHOW S. A. E. ATHLETIC LEANINGS

SPRING LAKE, N. J., June 21—Apparently about 98 per cent of the members of the S. A. E. are athletically inclined. That percentage, at least, would be indicated by the number wearing sports clothes. The raiment included every known design and some which never had been seen before. Some of the prizes for athletic prowess were articles of clothing.

A. K. Brumbaugh, for example, won a pair of tennis trousers. Brumbaugh draped his prize around his somewhat portly figure and found they were several sizes too large.

"Ah," he exclaimed, "made by Omar the tentmaker."

Subject of Gas Exhaust Vitiating Air Discussed

SPRING LAKE, N. J., June 21—Complaints made by certain physicians that the air in certain sections of cities where traffic is exceedingly dense is vitiated by the exhausts from motor vehicles were considered by the councilors of the S. A. E. at a meeting Monday.

After considerable discussion it was decided that the subject is not one which can be taken up by the S. A. E. at this time because it is not of an engineering nature and no formal request for action has been made by a regularly constituted organization. It must first be determined whether the degree of vitiation is dangerous.

Army Asking for Trucks That Can Cover All Roads

SPRING LAKE, N. J., June 21—Problems related to the development of "cross country cargo carrying vehicles suitable for use by all branches of the army" were discussed by military and civilian members of the Ordnance Advisory Committee yesterday.

Col. William G. Wall of Indianapolis, a prominent member of the S. A. E., is chairman of the civilian section of the committee. The committee has been charged with the preparations of specifications for a single type of vehicle which can back up and supply fighting forces in operation zones not passable for ordinary types of motor trucks.

750 S.A.E. Members Meet at Spring Lake

Attendance Second Best in History—Report Made on Society's Progress

(*Continued from page* 1349)

but that the annual dinner would be held, as usual, in connection with the New York automobile show.

Alden said the councilors had decided to ask the advice of the members as to whether a dance or carnival should be held in New York during show week. After considerable discussion, it was decided that "if the council does not think it advisable to hold a carnival, it will be supported by the Society." Alden thereupon announced that there will be no carnival.

The Sections Committee reported that in its opinion the principal activities of the sections should be professional rather than social although there was no objection to social affairs providing they were self-supporting. San Francisco, Milwaukee and Syracuse have petitioned for permission to organize sections. A plea was made for a larger section membership and it was stated that no section has a membership exceeding 50 per cent of the S. A. E. members in its territory. Alden stated that notwithstanding the relatively small membership, the sections are in better condition than ever before.

Prof. E. P. Warner of the Massachusetts Institute of Technology, a member of the New England Section, Elmer Schwarz of New York, and F. M. Germaine, Philadelphia, were elected as members at large of the Nominating Committee.

At the direction of President Alden, the Nominating Committee met Wednesday morning to organize and discuss candidates. Formal announcement of its decisions will not be made until Friday evening.

Balloon Tires Tried Out; Four Wheel Brakes Also

SPRING LAKE, N. J., June 21—Balloon tires aroused more interest than anything else of a technical nature at the S. A. E. meeting. Most of the members took rides in cars equipped with these tires which had been provided by different tire manufacturers. Firestone had them fitted on a Cadillac, a Buick, a Jewett and a Ford. Other companies which had cars equipped with them were Fisk, United States and Miller. All the tires were 34 x 7, low pressure, large section.

Most of those who took experimental rides were enthusiastic about the ability of a car equipped with these tires to go over curb stones and plowed ground without unpleasant effects.

Another demonstration which provoked much interest was of cars equipped with four wheel brakes of various types.

Bijur Assets Bought for Eclipse Company

Property Turned Over by General Electric in Accordance with Agreement

NEW YORK, June 20—The assets of the Bijur Motor Appliance Co of Hoboken, N. J., were sold at auction Monday as ordered by the court at the time John Milton was discharged as temporary receiver.

As was expected, the property was bought by the General Electric Co., which was the principal stockholder in the Bijur company, for $250,000. In accordance with an agreement previously made, the General Electric Co. turned over its purchase to the Eclipse Machine Co. of Elmira, N. Y.

This transfer gives the Eclipse company complete control of several valuable electric starter patents, including the Bendix drive. Both Eclipse and Bijur had been manufacturing virtually the same products following a legal decision won by Eclipse. In 1918 the Bijur company received financial assistance from the General Electric Co., which then became the principal stockholder.

Early this year the stockholders of the Bijur company decided to sell, but the plan was opposed by Harry Bijur, president of the company, who objected to the arrangements the General Electric Co. had entered into to pass control to the Eclipse company by means of a sale of the assets, and who secured the appointment of a temporary receiver. This receivership was dismissed in May.

Court Decision for Eclipse

This deal winds up an interesting chapter in the history of automotive development. In 1914 Bijur and the Eclipse company entered into a license agreement, and soon after the Eclipse company began making the Bendix drive for engine starters. This agreement for several years was the subject of litigation, which was finally decided by the Federal Court of Appeals in favor of Eclipse.

Now that the transfer has been made, the Eclipse company states that it has no present intention of continuing the business of the Bijur company in manufacturing electrical equipment for general trade purposes. The plant will be dismantled and such machinery as may be adaptable will be transferred to the Eclipse plants at Elmira and Walkerville, Ont.

Provisions have been made to carry on the manufacture of parts, etc., for service requirements, so that no embarrassment will be felt by past customers of the Bijur company.

IOWA REGISTRATION HIGH

DES MOINES, IOWA, June 18—Motor car registrations in Iowa during 1923 bid fair to far outdistance those of any previous year, according to figures that are now available on registrations up to and including April 25. On that date a total of 479,807 motor vehicles had been registered as compared with 438,589 on May 1, 1922. Up to April 1 fees received for registrations totaled $1,372,966.67. Polk County, of which Des Moines is the county seat, has alone registered 26,000 vehicles.

Palmer Put at Head of New Rubber Body

(*Continued from page* 1350)

the product. Rubber production and exportation must be regulated only by the natural law of supply and demand.

We recognize our obligation to the consuming public. Their interests always should be ours and our association should do all within its power to prevent any artificial regulation of rubber prices that are detrimental to the interests of the public.

I thoroughly approve of the idea of America producing its own rubber, and it is possible that enough available acreage will eventually be obtainable under the American flag to supply American manufacturers with all the rubber needed.

And it is certain that even if all the rubber we are to use cannot come from territory under our own flag, we surely can find sources of supply that will not be affected by the existing restriction act, now costing American manufacturers millions of dollars, which extra cost must of necessity be passed on to the consumer.

Stephens Prices Advance on All Cars Except One

MOLINE, ILL., June 19—The Stephens Motor Car Co., Inc., has announced an advance in the price of the Stephens cars.

All models on the "10" chassis have been increased $100, while on the "20" chassis, with the exception of the sedan which remains unchanged, the cars are $60 higher.

The following list shows the old and new prices:

"10" Chassis	Old Price	New Price
3-Pass. Roadster	$1,345	1,445
5-Pass. Phaeton	1,295	1,395
5-Pass. Touring Sedan	1,595	1,695
5-Pass. Four Door Sedan	1,895	1,995
"20" Chassis		
4-Pass. Phaeton	$1,985	$2,045
4-Pass. Sport Phaeton	2 085	2,145
7-Pass. Phaeton	1,685	1,745
7-Pass. Sedan	2,385	2,385

Cut in Tire Prices Made by Pennsylvania Rubber

NEW YORK, June 21—The Pennsylvania Rubber Co. of America announces reductions in tire prices ranging from 5 to 15 per cent. The announcement is accompanied by the statement that the company believes America should have tax-free rubber and says that it is conducting a research throughout the world in an effort to discover countries where conditions may favor the growth of rubber.

The Lee Tire & Rubber Co. has discontinued its consumers' list, leaving the dealer list about the same.

Tire Dealers Resent Reduction of Prices

Say They Are Overstocked and Public Was Becoming Confident in Lists

CHICAGO, June 20—Tire dealers throughout the country are tremendously overstocked, according to members of the board of directors of the National Tire Dealers' Association who met here yesterday and adopted resolutions condemning the action of the Firestone Tire & Rubber Co. in making its recent reduction in tire prices.

George J. Burger, president of the association, said that dealers from coast to coast are carrying a 60- to 90-day stock of tires when they should be carrying not more than 30-day stocks. He attributed this condition to an extremely backward season and forced selling to dealers by manufacturers throughout the spring under threats of a substantial and permanent increase in prices.

"We dealers in turn," he said, "have been endeavoring to sell to the public on the theory that an increase had to come. Just when sales were beginning to move at the present level of prices the announcement of reductions by one or two large companies has given the public reason to believe that other reductions may follow."

Directors Adopt Resolutions

The resolution adopted by the directors declares that they "express their most vigorous condemnation of the action of the Firestone Tire & Rubber Co. in advertising a reduction in tire prices just at the time when the public were beginning to purchase tires confidently at the existing level of prices."

The resolution continues:

Be it further resolved that we regard this action by the Firestone Tire & Rubber Co. as particularly detrimental to tire dealers, most of whom are carrying liberal stocks. We believe that the advertising of a price reduction at this time was unsettling to the entire industry without any offsetting gain to anyone.

Burger said that recently a few responsible manufacturers have turned over to dealers their large national commercial tire accounts and that the objective of fewer and better dealers was gradually being accomplished, some manufacturers having reduced their distributing organizations as much as 75 per cent.

Interests in Monroe Car Disposed of by Strattan

INDIANAPOLIS, June 21—Announcement is made by the Strattan Motors Corp. that it has disposed of its interests in the Monroe car in order to devote its time and energies to the marketing of the Strattan, which has been listed at $695. Headquarters will be continued in Indianapolis.

Rail Rates Lowered on Crated Exports

In New Tariffs, Eastern Roads Allow for Boxing of Overseas Shipments

NEW YORK, June 19—Freight rates on automobiles, chassis and trucks in carloads, boxed for export and shipped to Atlantic seaboard ports, will be reduced materially by new tariffs obtained through the efforts of a special committee from the National Automobile Chamber of Commerce, it is announced by James S. Marvin, manager of the Chamber's Traffic Department.

The new tariffs, which probably will be effective Aug. 1, were secured after a conference between Eastern railway traffic executives in New York and the N. A. C. C. committee, which consists of A. T. Waterfall of Dodge Brothers, chairman; A. H. Swayne, General Motors Truck, and Alvan Macauley of the Packard.

Savings on Shipments

As reported by this committee, in the usual method of shipping from four to six export jobs in each carload, $15.80 on each automobile will be saved in transportation costs on a vehicle weighing 4000 lb., boxed, the actual reduction in freight rates being 39½ cents per cwt. On a truck chassis weighing 10,000 lb., boxed, the saving of freight will be $23.50, the rate being reduced 23½ cents per cwt. These figures are Detroit to New York. From other shipping points the rates are in proportion.

Details will be announced in tariffs at once, the basis being an increase in the minimum carload weight of 15,000 lb., for 36-ft. cars and rate reduced to 15 per cent below second class, on passenger cars. For chassis (freight or passenger) and trucks, 20,000 lb., the rate will be 20 per cent below third class.

Explaining the results of the committee's work Marvin says:

These changes result from establishing a separate rating for export boxed automobiles as compared with the rating applied on domestic shipments, which are not boxed. This boxing constitutes an important difference in transportation elements usually recognized in rate and classification making, and a change has been urged for a long time on the railroads by the Traffic Department and traffic managers of the industry. Preliminary favorable decisions of railroad traffic managers failed to meet the approval of railroad executives, resulting in the appointment of the special committee which concluded the negotiations this week.

Rail Executives Commended

Our committee pointed out to the railroad executives the high interest of automobile manufacturers in railroad welfare and their desire to have the general scale of freight rates yield adequate return to the carriers; at the same time the important difference as compared with domestic shipments, notably the additional weight of boxes, resulted in bringing the freight rates on these shipments entirely out of their proper sphere in the classification from a rate making viewpoint and in comparison with the elements considered in rating other classes of freight. Our committee feels that railroad executives have met this situation in a fair and broad minded manner and that our members will be highly appreciative of their action.

The importance of these reductions will be appreciated when it is remembered that 67,000 motor vehicles were exported from the United States last year, most of which went by sea. In the first three month of this year the exports of completed vehicles from the United States totaled 43,000. The saving will affect buyers in foreign countries who pay the freight on export shipments.

WESTCOTT PREPARES USED CAR HANDBOOK

SPRINGFIELD, OHIO, June 18—The Westcott Motor Car Co. has issued a dealer's handbook on the used car, which is based on the fact that the used car business in the past has not been operated on any set of definite rules.

The company has laid down a set of rules which it states is not founded on theories but on the experience of dealers all over the country who have made a success in handling used cars.

Studebaker Organizing Sales Agency in Paris

PARIS, June 10 (*by mail*)—The Studebaker Corp. of America is about to enter the French market and will exhibit at the Paris Salon, states H. C. Welch, the factory representative now traveling through Europe. A private company is being formed in Paris and will take care of the whole of French territory. Arrangements are also being made for opening up selling agencies in other Continental countries.

In addition to Studebaker, the American industry will be represented at the October show to be held in Paris by the entire line of General Motors. Lincoln has also secured a stand, but the application of the Ford Motor Co. has been refused on the ground that this firm has taken part in outlaw shows in France. All available space is declared to have been booked for both the passenger car and the truck shows, which will be held in the Grand Palais, with an interval of a couple of weeks between the two.

CHECKER AIMS AT 30 DAILY

DETROIT, June 18—The Checker Taxicab Co. turned out its first chassis at its Kalamazoo plants, Friday, and is working toward a schedule of 15 chassis daily within two weeks. Production is expected to reach 30 daily by August. The company is employing 600 to 800 men in the plants recently taken over from Handley-Knight and Dort Motor Car Co.

Body Builders Name Convention Speakers

R. C. Getsinger and E. J. Thompson Scheduled to Address Detroit Meeting

DETROIT, June 18—Plans for the annual convention of the Automobile Body Builders Association, which is to be held June 26-27, are being completed rapidly.

As yet no one has been selected to make the address on "General Fundamental and Underlying Conditions in the Automobile Industry and Their Effect upon the Automobile Body Industry."

R. C. Getsinger, formerly sales manager of the Lincoln Motor Co., will speak on "Conservation of Effort on the Part of the Body Builder," while to E. J. Thompson of the E. J. Thompson Co. has been assigned "Conservation of Practice and Control Through Proper Knowledge of Costs."

The association announces that it has separated its membership into sections, each with a permanent chairman. These sections will be divided into the following groups: Passenger body, bus body, commercial body, upholstery fabrics, body hardware, paint and varnish, decorative hardware, coated material, windshield and glass, structural material, leather and mill supplies.

Within the last year the association has increased its membership 83 per cent, the following having been admitted since Jan. 1:

Auto Curtin Silk Co., New York; Biddle & Smart Co., Amesbury, Mass.; Brunn & Co., Buffalo; Bryant Body Co., Amesbury, Mass.; Farnham-Nelson Co., Roslindale, Mass.; Ferro Stamping & Manufacturing Co., Detroit.

Getsinger Fox Co., Detroit; McFarland Motor Corp., Connersville, Ind.; George W. McNear, Brookline, Mass.; Merrimac Body Co., Merrimac, Mass.; O'Bannon Co., West Barrington, R. I.; Paterson Vehicle Co., Paterson, N. J.; N. A. Petry Co., Philadelphia; Puritan Bed Spring Co., Stewart-Mowry Co., Chicago.

B. E. Taylor Manufacturing Co., Chicago; Walker Body Co., Amesbury, Mass.; Witham Body Co., Amesbury, Mass. and Yellow Cab Manufacturing Co., Chicago.

Repair Parts Cost Hupp Owner $15.53 Last Year

DETROIT, June 18—Cost for repair parts to owners of the 117,353 Hupmobiles in use throughout the world in 1922 reached the low level of $15.53 a car, the Hupp Motor Car Corp. declares, following the collection of complete data on the subject. The cost of repair parts last year dropped to the lowest level it has reached since the company began keeping such records in 1916.

The significance of the figures is not that they represent slightly more than $1 a car a month, but that they cover every Hupmobile in use, thousands of which are more than eight years old, says President C. D. Hastings.

Hupp Foreign Agents Meet in Conference

Those in Australia and South Africa Report Favorable Outlook There

DETROIT, June 18—The outlook for business in Australia and South Africa in the latter part of the year is excellent, report representatives of the Hupp Motor Car Corp. in these countries, who are at the factory this week participating in export conferences. There is a strong, steadily growing market for cars in both countries due to favorable economic conditions and the American made cars are practically without competition except in the case of Fiat which is making an active bid for business.

In Australia the continuance of heavy rainfall which the country is now experiencing means great prosperity for wheat and wool growers, upon whom the economic structure of the country rests. Prosperity with them means that the entire country is prosperous. Australians have to use cars to get about, says C. G. Poole, who has been in Australia eleven years for Hupp, and when they have money they are the best buyers in the world.

American Automobiles Favored

Automobile sales have been good in Australia, he states. Road conditions there reduce the life of cars considerably under that in the United States and for that reason there is a quicker and larger volume of replacement business. This augurs against the market becoming overstocked easily. American cars are favored because of price and durability. Hupp, he says, is finding a policy of tailoring bodies to the liking of the buyer, an important factor in retail sales. Each distributor maintains a body plant.

New Zealand is not so prosperous as Australia and is not in a position to buy cars. The copra market is low and is holding business in the island groups to a minimum. In Hawaii much depends upon sugar prices. Planters declare that a continuance of present sugar prices for another month will place the islands in a position to take many cars.

Immigrants Order Cars

South Africa, with a steadily growing population made up to a large extent of immigrants of the best type, presents a steadily growing market for cars, according to Guy G. Catlin, sales manager in that country. Often immigrants cable ahead for delivery of a certain type of car, and there are few who do not buy a car almost at once after their arrival. This is because automobiles present practically the only means of transportation.

Gold and diamond mining and agriculture have kept the country on a sound economic basis throughout the post-war period, although the exchange suffered because of banking transactions being handled through London. Development of the country is retarded to some extent by the attitude of early settlers who hold immense tracts only partly cultivated or used. Motor trucks and tractors could be sold but only after practical demonstration over a period of time.

Africa, generally, needs development mechanically, Catlin says. Manufacturers of machinery and appliances have never attempted to educate the people to the use of labor and time saving devices. Sales have been made to dealers in many places, but the machines have never been sold because dealers didn't know enough about them to show how they worked. Practically all of the mechanical advancement in Africa today is being pioneered by the automobile.

Effort should be made by the National Automobile Chamber of Commerce to interest manufacturers in other mechanical lines in the development of business in Africa, Catlin suggests. As the country advances in its ability to produce so will its wealth be increased and the field for automobile business enlarged.

Yellow Cab Arranging for Foreign Business

WASHINGTON, June 16—With a view to the development of the company's export trade, Raymond Roe, James Warner, Jr., and H. A. Yagle, representatives of the Yellow Cab Manufacturing Co. of Chicago, spent three days here in consultation with government experts. The data of the Automotive Division of the Department of Commerce was made accessible and M. H. Hoepli, acting chief, arranged conferences with other foreign trade experts.

It is said that agents will be sent by the company to the Far East and Latin America.

BARTON SALE CONFIRMED

MILWAUKEE, June 18—Purchase at receiver's sale of the entire assets of the bankrupt Barton (Wis.) Axle Co. for $76,000 by W. L. Huffmann and R. L. Huffmann of Elkhart, Ind., has been confirmed by the court. The plant is now undergoing rehabilitation and is expected to be ready to start production about July 1. The plan is to build axles for Huffmann trucks as well as for the commercial market.

Underwriters Watch Used Car Situation

Companies, Profiting by Experience, Show Caution in Issuing Policies

MILWAUKEE, June 20—Retail business in passenger cars is settling down to a steady, normal gait, after three months of rather hectic supply and demand. Deliveries from factories are coming steadily, and while closed types are still scarce and dealers behind on orders, open cars are in moderate supply and nearly all dealers are able to make immediate delivery.

It is stated, however, that there is no uncomfortable accumulation, and confidence is everywhere expressed in the local dealer trade that every car scheduled to come up to Sept. 1 will find a ready market.

Extraordinary efforts are being made by dealers, with the cooperation of the newspapers, to move used cars, and sales are fairly satisfactory as to numbers, although in many instances dealers are compelled to name some low prices to make sales. Newspapers are helping to attach a greater dignity to the used car by display advertisements.

People Buying New Cars

A leading insurance authority discusses the question of used cars from an underwriting standpoint as follows:

Automobile underwriters are watching very carefully the used car situation at this time. Automobile concerns are running at full blast turning out new cars. The new car market is most lively. Present prices are alluring. People are buying new cars in large numbers.

While the second-hand car market has kept steady, many predict that about Aug. 1 or Sept. 1, dealers will find that they have a lot of used cars on their hands which they can't get rid of. At present the trading-in value is no greater than the second-hand value. In fact, many owners find they can do better by hunting up their own purchasers than trading in their cars at present second-hand price. This is particularly true where a car is in good shape.

It is not thought that companies will find themselves in the predicament of a couple of years ago because they are more cautious in their underwriting, they are not issuing valued policies and they are not giving insurance to cover full value. If, however, there are a large number of second-hand cars on hand that cannot be moved, an abnormal situation will be created that will have to be considered.

Table of Imports and Reimports of the Automotive Industry for April, 1923, and for Ten Months

	April 1922		April 1923		Ten Months Ending April 30 1922		1923	
IMPORTS	No.	Value	No.	Value	No.	Value	No.	Value
Automobiles and chassis (dutiable)	13	$31,219	47	$75,161	383	$638,508	447	$728,791
Other vehicles and parts (dutiable)	..	59,897	..	159,507	..	737,993	..	898,872
REIMPORTS								
Amount of duty collected	..	.....	..	.....	..	.....	..	(a)208,152
Automobiles (free of duty)	88	154,259	423	426,342	2,469	3,796,892	3,078	3,750,941

(a)—Beginning September, 1922.

Men of the Industry and What They Are Doing

Ruthenburg Manages Yellow Sleeve

Louis Ruthenburg, one of the most widely known production men in the country and for ten years connected with the management of the General Motors interests at Dayton, Ohio, has been made general manager of the Yellow Sleeve-Valve Engine Works at East Moline, Ill. Ruthenburg has been general works manager and a member of the executive committee of the Dayton Engineering Laboratories Co., manufacturing the Delco, and served as manager of the manufacturing division of the General Motors Research Corp. He was president of Associated Motor Industries, but resigned that position.

Hannum and Orr Dined

On the occasion of the second anniversary of their connection with the Oakland Motor Car Co., George H. Hannum, president and general manager, and E. M. Orr, assistant general manager, were given a dinner at the Aviation Country Club, Pontiac, by other department heads, officials and factory superintendents of the company.

Sales Crucible Names Galbraith

A. T. Galbraith has been appointed general manager of the Sales Crucible Steel Co. of America. He was formerly general manager of the Holcomb Steel Co. of Syracuse, with which he started as a chemist after graduating from college.

Pask Joins Studebaker

Charles A. Pask has resigned as advertising manager of the Wayne Tank & Pump Co., Fort Wayne, Ind., to become assistant advertising manager of the Studebaker Corp. at South Bend, Ind.

Sewell Goes to New Zealand

Ira E. Sewell, assistant branch manager of the J. I. Case Threshing Machine Co. at Madison, Wis., has been transferred to New Zealand as manager of the branch at Dunkirk. He departed for his new station on June 12.

Changes with Willys-Overland

E. H. Belden, who has been assistant to President John N. Willys of the Willys-Overland Co., and vice-president in charge of engineering, has resigned. He has not announced what plans he has for the future. Belden has been a leader in the automotive field, having been affiliated with the Packard before going to Toledo seven years ago.

Thomas Costello has been promoted to division general superintendent of the company and will have charge of machine shops, sheet metal, forge, body, wood mill, plating and foundry divisions. He formerly served as works manager of Oldsmobile at Lansing.

Grant Rowlands has been made division superintendent and is now in charge of the assemblies, paint shop and cushion spring divisions. Wayne Anderson has been promoted to superintendent of Overland assembly and Arthur King has been made division superintendent of the machine division.

Leavenworth with Paul Teas

Ralph Leavenworth, formerly advertising manager of the Standard Parts Co., is now associated with Paul Teas, advertising counselor, of Cleveland. Leavenworth is handling the account of the Bock Bearing Co. and the business paper advertising of the Eaton Axle & Spring Co., as well as cooperating on other accounts served by Paul Teas.

Taylor Farran-oid Sales Head

H. E. Taylor, for the last three years sales manager of the Las-Stik Patch Manufacturing Co. of Hamilton, Ohio, has been named sales manager of the Farran-oid Co., Akron, manufacturer of fan belts and tube patches.

Ostrander Succeeds Rowley

R. P. Ostrander has been appointed advertising manager of the Novo Engine Co. of Lansing, Mich., succeeding C. E. Rowley, resigned.

Haynes Prices Phaeton of New Model at $1,295

KOKOMO, IND., June 18 — The Haynes Automobile Co. announces a new model, Model 60, list prices on which are as follows: Standard phaeton, $1,295, the lowest price ever put on a Haynes; sedan, $2,295; sport phaeton, $1,750; sport roadster, $1,695; sport sedan, $2,495, and sport brougham, $2,195.

Reductions have been made in the Haynes 77 line in addition, ranging from $600 to $400 in the standard line and from $400 to $200 in the sport series.

Hudson Announces New Five-Passenger Sedan

DETROIT, June 19—The Hudson Motor Car Co. is adding a new five-passenger sedan body.

It is mounted on a standard Hudson chassis and is similar to the seven-passenger type, except for a soft top and deeper upholstery, front and rear. The body is all aluminum. The price is $1,995.

CLAIMS DEMURRAGE RECORD

DETROIT, June 16—The Des Moines branch of the Ford Motor Co. is claiming a company record in the handling of 23,040 freight cars between May 1, 1921, and May 1, 1923, without demurrage.

Cadillac to Continue Using V-Type Engine

President H. H. Rice Denies Rumor That Departure Is Contemplated

DETROIT, June 20—The rumor reported current in the trade that the next Cadillac model would witness a departure from the V-type engine were replied to with the statement by H. H. Rice, president of the Cadillac Motor Car Co., that no such change is anticipated at any time except where advancement in engineering accomplishment makes such changes advisable.

There is nothing now on the engineering horizon that would indicate the possibility of such change, he said. In making the statement he calls attention to the fact that the company's advertising expresses its conviction in the superiority of this type of engine. This, he said, was the company's word to the public on its manufacturing policy and was designed to counteract propaganda to the effect that a change might be expected.

Some time ago the Cadillac dealer organization was advised of the existing situation by Lynn McNaughton, vice-president in charge of sales. Furthermore, Rice said, the Cadillac company was opposed to the yearly development of new models and was committed to the policy of incorporating changes into its current cars as they were developed. In this way, he said, the type 61 was considerably changed from the time it was introduced.

Bethlehem Motors Adds Other Models to Line

NEW YORK, June 18—Two models have been added to its line of trucks by the New Bethlehem Motors Corp., to be known as Contractors' Specials.

Model CNC has a 118-in. wheelbase, carries 36 x 6 front and 38 x 7 rear pneumatic cords, mounted on Smith steel wheels. The equipment includes open driver's seat and Woods two-yard type HH3 steel dump body with standard Woods under body hoist.

Model HNC has a 120-in. wheelbase, carries a Woods three-yard type HH3 steel dump body with under body hoist, mounted on 36 x 6 and 40 x 8 pneumatic cords.

Both models use the New Bethlehem 4 x 5¼ engine, with Bosch high-tension magneto ignition, electric starting and lighting, Willard or Prest-O-Lite storage battery and Zenith carbureter. The Dot high pressure system of lubrication is used. The list prices are given as $3,245 and $4,255.

36 States This Year Have Gasoline Taxes

Seventeen Commonwealths Join Those Where Levies Were in Force in 1922

(*Continued from Page* 1351)

Continuing his report, Meixell says:

While many persons are urging gasoline taxes to take the place of registration fees and other form of special levies on motor vehicle operation, it is important to note that in only two of the thirty-five States which have so far enacted motor fuel taxes has there been the elimination or even reduction of other forms of special levies. In California, privately used motor vehicles must henceforth pay an annual flat rate registration fee of $3, while in Utah there has been a 50 per cent reduction in the registration fees for passenger cars and the same for trucks of ½ and ¾ ton capacities.

On the other hand, of the sixteen States adopting gasoline taxes this year and the eight others increasing the rate of their existing taxes, seven of them actually made increases of one kind or other in some or all of their annual registration fees. This was particularly true with regard to trucks of the larger capacities.

At present a special committee of the National Automobile Chamber of Commerce is making a careful and thorough study of all the facts and factors involved in the question of gasoline taxation. The committee consists of H. H. Rice, Cadillac, chairman; Roy D. Chapin, Hudson; A. R. Erskine, Studebaker; C. C. Hanch, Lexington; Windsor T. White, White and W. E. Metzer, Columbia.

The findings and recommendations of this committee will be used as the basis for the adoption by the Chamber of a governing policy with regard to this very important subject.

Stockholders of Dorris Give Consent to Merger

KOKOMO, IND., June 18—Financial interests are now preparing to make effective the merger of the Haynes Automobile Co., Winton Co. and Dorris Motor Car Co. into the Consolidated Motors Corp., capitalized at $19,000,000.

Approval of the merger by stockholders of the Dorris company at St. Louis Saturday marked the indorsement of the plan by the investors in the three companies, Winton and Haynes shareholders having approved the plan previously.

It is understood that Consolidated Motors will be a holding corporation and that each of the three component companies will continue as an operating company. The three makes of cars are to be continued, and it is likely that a fourth car, to sell for $1,000 or less, will be added.

Indiana Bought 913 Trucks During May

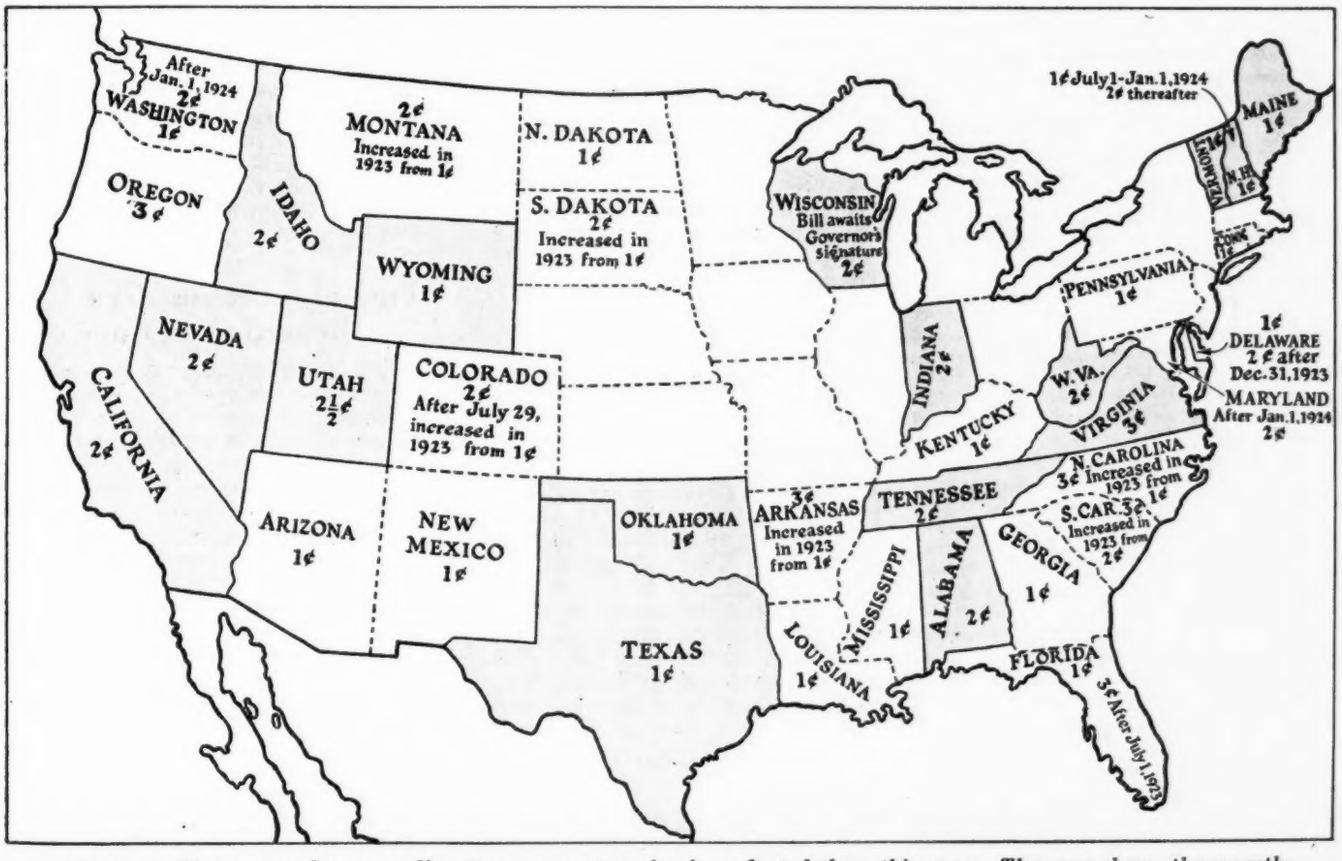
Total Number of Motor Vehicles Sold Declined, Due to Slow Deliveries

INDIANAPOLIS, June 20—Check of sales of new motor vehicles during May as reported by the office of the Secretary of State of Indiana shows that the entire State was off about 1¼ per cent as against April, with 13,648 sales made in May and 13,815 in April.

Indianapolis, on the other hand, shows 133 more vehicles sold in May than in April, when 2155 were retailed. Of the total 2288 motor vehicles sold and registered in Marion County (Indianapolis) last month, 209 were trucks. The total truck sales for the State were 913.

Some small town dealers are far behind on deliveries and are resorting to the method of stationing representatives at distributing and assembly points and endeavoring to obtain cars from dealers who have fewer sales than their schedule allotments. Many Ford dealers were far behind on deliveries last month, and but for this fact May doubtless would have gone far ahead of April.

Country Shows General Adoption of Tax on Gasoline



Thirty-six States now have gasoline taxes, seventeen having adopted them this year. The map shows the growth of this form of taxation, the shaded States being the ones to enact this sort of legislation this year. The map also shows where other States have increased the fees

Mayors' Aid Sought in Traffic Problem

Col. Clifton of N. A. C. C. Writes Them Outlining Relief Measures

NEW YORK, June 19—Realizing that the traffic problem is one of the most important confronting the industry at the present time, Col. Charles Clifton, president of the National Autombbile Chamber of Commerce, has taken steps to bring the matter to the attention of the executives of the big cities of the country in the hope of bettering conditions through general cooperation.

Letter Asks for Suggestions

With this idea in mind, Colonel Clifton has written to the mayors of Chicago, New Orleans, Boston, San Francisco, Los Angeles, Atlanta, Detroit and Des Moines, to Dr. John A. Harriss, New York's traffic expert, and to Lawson Purdy, president of the National Conference on City Planning, pointing out the desperate need of relief from traffic congestion, asking for suggestions and sounding out the executives on some possible remedies.

In his letter he says:

So rapid has been the growth of motor transportation in the past ten years that our large cities are finding traffic congestion a serious problem. Our city streets for the most part were laid out in the days of smaller urban population and of horse-drawn vehicular traffic. Public education and special regulations will help, but the new conditions call for definite planning for the growth of our cities and their outlying districts for the next ten years.

Advances Six Ideas

Colonel Clifton points out the following six ideas as affording possible remedies and he is asking the mayors for comments on these points:

1—More playgrounds, so that children may have better play spaces than the streets. Children have a right to play. Child welfare comes before all other issues, and our modern cities should be planned to care for this. Certain streets can be set aside for play, if present provisions are inadequate. Roofs of apartments and tenements could be utilized.

2—More attention to traffic safety regulations. Study should be made of the volume of traffic at various points, of where the most accidents occur, in order that remedies may be scientifically applied. Careless drivers should be dealt with promptly, severely and with impartiality.

3—New boulevards paralleling present-day main thoroughfares.

4—Optional detours for through traffic.

5—Provision for parking space in the erection of new office buildings.

6—Use of vacant lots for parking spaces.

It is aimed to arouse city-planning authorities to the need of anticipating traffic demands, a point which was brought out at the recent city-planning convention at Baltimore, where the experts started figuring on how automobile traffic could be reduced. John C. Long, of the N. A. C. C. executive staff, showed that the city-planners should take a broader view of the situation and that instead of trying to cut down traffic they should make preparations to care for expansion, a view which was generally concurred in by the convention before it adjourned.

AMERICAN CARAVAN STUDIES HIGHWAYS

WASHINGTON, June 18.—One of the longest motor truck trains making a cross country journey since the war is now en route to Washington for Quantico, Va.

There are 75 trucks and 12 motor ambulances in the train which is moving from Fort Benjamin Harrison, near Indianapolis, a distance of 1000 miles.

The purpose in moving the trucks in the caravan is to allow Government technicians to make a close study of motor endurance highway conditions and the practicability of motor transportation.

Birmingham Indictments Unfounded, Court Holds

WASHINGTON, June 18—An indictment charging the Birmingham Motors Co. with conspiracy to use the mails to defraud was dismissed today in the District of Columbia Criminal Court. The indictment, as drawn by the Government, charges that officials of Birmingham Motors sold between $3,500,000 and $4,000,000 worth of stock in their company without having any tangible assets.

The indictments were returned last October and charged Samuel A. Carlson, mayor of Jamestown, N. Y., Guy F. Allen, former treasurer of the U. S. Treasury and James B. Mansfield, engineer and 24 other officials of Birmingham Motors with victimizing numerous persons in various parts of the United States to whom stock in the corporation was sold.

Birmingham Motors, it is alleged in the indictment, had perfected and sold the stock using patents for a floating axle as the basis for their stock subscriptions. The Government charged that statements in the literature sent out by the company were not only misleading but fraudulent.

The effect of the decision in the Court today is to give the Birmingham Motors Co. a clean bill of health insofar as the Government charges of conspiracy to defraud in the sale of stock is concerned.

GRAY BUILDING 125 DAILY

DETROIT, June 15—Gray Motor Co. is now building 125 cars a day and has orders ahead for fully a month's capacity operation. The company is adding to the number of dealers as its capacity is increased.

Fit American Cars with Perrot Brakes

French Buy War Stocks at Moderate Price and Equip Them Privately

PARIS, June 10 (*by mail*)—Numerous high-grade American cars are making their appearance in France with front wheel brakes. These cars are mostly war stock, bought at moderate prices by their owners and equipped privately with the Perrot braking system.

The Piganeur company of Clichy, near Paris, a concern in which Perrot is financially interested, has an important factory equipped exclusively for front wheel brake equipment, and is working double shifts on transformations, the cars mostly handled being high-powered French models and such American makes as Cadillac, Locomobile and Marmon.

In these changes a new front axle is fitted with aluminum brake drums embodying the Perrot type of semi-servo mechanism. With this device the first shoe with which the cam comes in contact is linked to the second one, and this latter has only one fixed point, so that the first shoe, being carried round by the revolving drum, applies the second brake shoe. With this device it is practically impossible to lock the front wheels.

The Vermot Forge Co. of Paris, one of the biggest concerns in France specializing in axles and springs, is marketing three types of front axles specially designed for front wheel brakes and sold complete with all brake fittings. The Perrot type brake has been adopted. The axle is of I-section between the spring seats and of almost circular section outside the pads.

Fuel Shortage in Peru Regarded as Good Sign

LIMA, PERU, May 31 (*by mail*)—One of the noteworthy features in the automotive renaissance of Peru is the appearance of a better class of oil, gasoline, tire and accessory stores. These new establishments are well located, well kept and have a general good business atmosphere about them. Vulcanizing shops and battery service stations are frequently associated with them.

There has been a shortage of the better grade of gasoline in Lima during the latter part of the month. This may have been due to various causes, such as failure of shipments to arrive promptly from the oil district, increasing use of the better grade of fuel or more extensive employment of automotive transport. Whatever the cause, the gasoline shortage is encouraging, as indicating that more automobiles and trucks are operating and serves as another reason for believing that Peru is on the upgrade.

Car of 183 Cu. In. Wins 24 Hour Race

Chenard-Walcker Averages 57.1 M. P. H. in European Road Contest Near Le Mans

PARIS, June 10 (*by mail*)—A distance of 1372.5 miles, equal to an average of 57.1 m.p.h., was covered in the first twenty-four hour road race to be held in Europe, by a 183 cu. in. Chenard-Walcker stock four-passenger car, driven alternately by Lagache and Leonard. The race was the first of a series of competitions for the Rudge Whitworth Cup and was held over a permanent triangular circuit ten miles round, near Le Mans.

Only one man was allowed aboard at a time, and no outside assistance could be given. All classes of cars were admitted, and, with the exception of the 67 cu. in. models, had to be equipped with four-passenger bodies and carry 396 lb. of ballast. Although officially considered an elimination, with a minimum distance to be covered in order to qualify, the event was a race from beginning to end.

Second Car Like First

Second position was secured by a Chenard-Walcker similar to that which won, with Bachmann and Dauvergne at the wheel, the distance covered in the twenty-four hours being 1327 miles. Third place was won by a 122 cu. in. four-passenger Bignan with an overhead valve engine having positive valve closing mechanism. It was handled by De Tornaco and Gros and covered 1284 miles.

The English 183 cu. in. Bentley, handled by Duff and Clement, tied for fourth place with the 122 in. Bignan, driven by De Marne and Martin, the distance being 1198.5 miles. The fastest 67 in. two-seater was a Salmson, which averaged 43.7 m.p.h. for the two rounds of the clock.

All the competition lay between the Chenard-Walcker, driven by Lagache, Duff's Bentley and De Tornaco's Bignan. The English car appeared to be the fastest on the course and set up the lap record of 67 m.p.h. It was handicapped, compared with the others, by not having front wheel brakes, and its chances of winning were eliminated when a stone went through its gasoline tank.

Time Lost at Pits

Two and a half hours were lost in coming to the pits for gasoline for the stranded car and in plugging up the hole. The first four hours were run in heavy rain, as a consequence of which the going was heavy throughout.

Of the thirty-three to start, thirty went the entire distance. There were few mechanical failures, lighting sets gave considerable trouble, and drivers suffered severely from rain and mud, particularly in the first half of the race.

The engine used on the winning Chenard-Walcker was a four-cylinder overhead valve sporting model with the overhead camshaft driven from the rear by a vertical shaft and developing its maximum power at 3400 revolutions. This car was fitted with Perrot front wheel brakes operated through the Hallot servo mechanism.

The 122 in. Bignan, which secured third place, is a four-cylinder model with positive valve closing mechanism. There was an interesting demonstration between this and another and similar car having spring closed valves. The car with the positive valve closing mechanism was decidedly faster than its companion. According to the makers, the engine with spring controlled valves cannot exceed 3600 revolutions, while its companion can be run as high as 4500 revolutions, with a gain of 10 hp. On some stretches of the course the engine turned over at 4300 revolutions. The mechanism gave no trouble, and the car went through the twenty-four hour event without any mechanical work being done on it.

FORD MAKING EXPERTS OF CHINESE STUDENTS

DETROIT, June 16—Routine of the manner in which Ford Motor Co. is developing the 100 young Chinese students at the plant as expert service men shows that they are working in each department until they have mastered the major operations. Each student eight hours a day is getting practical experience in the factory. At 4 o'clock each Wednesday the whole group meets in the school building for an hour to discuss some problem of automobile construction or operation.

One of their number who is a mechanical engineer conducts a drawing class once a week for forty members. Another leads a class in mathematics. The students have all been picked by Dr. Joseph Bailie of Pekin University. In their studies here they will familiarize themselves with the process of manufacture, care and repair of the Ford car, Fordson tractor and the Lincoln. In another year many of the class will be ready for service in their native land.

BUSES IN BRATTLEBORO

BRATTLEBORO, VT., June 16—Motor buses will soon replace trolley cars in this town, according to W. A. Buttrick, vice-president of the Twin-State Gas and Electric Co. The company takes the ground that it is not obliged to operate its service at a loss, and says the State law placing buses under the public service commission allows the proposed change. It is proposed to purchase three buses.

Dealer Profits Small in 1922, Vane States

Best Merchandising Year Poor in Returns—Blame Put on Retailers' Methods

LOS ANGELES, June 18—The first of the Pacific Coast regional meetings under the auspices of the National Automobile Dealers Association was held here today and was attended by 500 Southern California automotive dealers and executives. The speakers were C. A. Vane, manager of the association; C. E. Gambill, second vice-president; Percy E. Chamberlain and J. S. Knox.

Speaking on the subject, "Automobile Dealer Profits," Vane startled his hearers with his story of dealer mortality and with the statement that, although the automobile industry stands first in the country, the profits to dealers are so low as to be out of reckoning.

He declared that although 1922 was the greatest merchandising year in the industry's history, less than 10 per cent of the 50,000 dealers in the country made a profit. He charged automobile dealers with violating the fundamental laws of economics as well as those of merchandising, and asserted that the country's dealers are suffering from "red ink poison."

Chamberlain discussed service, maintaining that the entire success of business rests upon this foundation.

Gambill gave his ideas of what constitutes an automobile dealer, and among other things advocated dealers going into the financing and insurance departments of the business.

Knox discussed the subject, "Salesmen Who Know How to Get the Money."

The same group of speakers will address regional meetings in San Francisco, Portland and Olympia.

Committee Wants Fewer Types of Radiator Caps

NEW YORK, June 14 — Progress reports were presented by committees dealing with radiator caps and storage batteries at the meeting of the Automotive Simplified Practice Committee held here today. Discussion at the meeting indicated that some attempt will probably be made to encourage the reduction of the number of radiator cap types. The committee report showed that about thirty different sizes are now being used.

Action concerning storage battery dimension standards was referred pending the revision of certain S. A. E. standards now under way.

HEAVY GMC DEMAND

DETROIT, June 18—General Motors Truck Co. reports that distributors are asking for all the trucks the production facilities of the plant can give them. June output will represent the capacity of the plant and no cut in the output will be made through July.

FINANCIAL NOTES

Hudson Motor Car Co.'s net earnings for the first six months are estimated at between $4,000,000 and $5,000,000, or more than sufficient to cover the full year's dividend of $3 a share, which consists of a regular disbursement of 50 cents and an extra disbursement of 25 cents quarterly. It is stated that the company has $11,000,000 in cash, in addition to blocks of United States Treasury certificates, against which there are no payables except a small amount of current accounts. For the fiscal year to Nov. 30, 1922, net profits were $7,242,697, or $6.03 a share.

Sparks-Withington Co. stockholders have voted to change the designations, preferences, voting powers, restrictions and qualifications on the preferred stock so as to create an authorized issue of $500,000 7 per cent cumulative sinking fund preferred stock and $500,000 7 per cent cumulative convertible preferred stock in place of the $1,000,000 of preferred stock authorized prior to the exchange. The preferred stockholders are given the option of choosing either stock in exchange for their holdings.

Michigan Securities Commission in May passed upon the following securities: The issuance of 140,000 shares of non-par at $30 a share by the Eaton Axle & Spring Co., Cleveland; $250,000 in common stock by the Lindell Drop Forge Co., Lansing; $50,000 preferred and 5000 shares of non-par as bonus with preferred by the E. C. Long Piston Co., and $500,000 first mortgage 15-year 6½ per cent S. F. gold bonds by the Michigan Steel Corp.

Moon Motor Car Co. estimates net earnings for the first five months at approximately $595,000, equal to $3.30 a share on the 180,000 shares of capital stock, which compares with $5 a share for the full 1922 fiscal year. It is planned to make the next quarterly dividend on a $3 basis for 1923 by increasing the regular quarterly rate from 50 cents a share to 75 cents and declaring an extra dividend of 25 cents to balance the last quarterly payment at this rate.

Mack Trucks, Inc., expects profits for the quarter ending June 30 to total $2,500,000. The first three months, after the usual deductions, showed $1,514,933, equivalent to $4.34 a share on the 283,108 shares of common stock. The company expects to show $14 a share on the common for the half year, but probably will not report more than $12.

Yellow Cab Manufacturing Co. has appointed a committee to draw plans to consider the advisability of increasing capital stock issued and the dividend to be paid. The committee will report at the July meeting of the directors.

Edmund & Jones Corp. of Chicago has declared a quarterly dividend of 50 cents and an extra dividend of 50 cents on the common stock, also the regular quarterly dividend of 1¾ per cent on preferred, all payable July 1 to stock of record June 20.

Packard Motor Car Co. has declared an extra dividend of 2 per cent and regular quarterly dividend of 2 per cent on the common stock, both payable July 31 to stock of record July 16.

Gill Storage Battery Co. of San Bernardino, Cal., has increased its capitalization to $250,000 and is disposing of another block of stock to take care of an expansion program now under way.

American Chain Co. has declared a dividend of 50 cents on the Class A stock, payable to holders of stock June 30. Books close June 20 and reopen July 2.

Budd Wheel Co. stockholders have voted to increase the common stock, no par value, from 50,000 to 100,000 shares. No offerings of new stock will be made at present.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

While the business situation remains "spotty," with a diminution in buying in primary markets and irregularities in retail distribution of commodities, no marked changes in the general situation are recorded from week to week.

Further curtailment in textile mill operations is noted, which is apparently inconsistent with the latest report of mill consumption of cotton. Consumption in May was 620,965 bales, a gain of 43,569 bales over the consumption in April. Reduced to a daily average, however, consumption in May was slightly below the April rate. Active spindles in May numbered 35,390,137, as compared with 35,515,791 in April.

A slight falling off in steel production last week was reported, but despite the reduction in new orders booked, prices have remained firm.

A decline of 1 per cent in employment in manufacturing establishments in New York State was recorded in May, partly attributed to seasonal influence, but probably a reflection also of the slight lull in certain trade lines in recent weeks. Preliminary figures for establishments throughout the country, however, showed a gain of 0.3 to 1 per cent in number of employees. These divergent reports illustrate the unevenness of changes in business conditions.

Wholesale prices as measured by the Fisher index declined last week by 1 point. The decline since the first week in April is 5.4 per cent.

Discounts by the Federal Reserve banks in the week ended June 13 declined $27,056,000. Federal Reserve notes in circulation declined $14,458,000, and deposits $19,711,000.

Aircraft Association Winner in Martin Suit

WASHINGTON, June 19—The suit of James V. Martin, aeronautical inventor and manufacturer, against the Manufacturers' Aircraft Association, Inc., with headquarters in Washington, for $51,000,000 damages and $51,000 attorney's fees has been dismissed by the District Supreme Court.

Martin alleged that the Manufacturers' Aircraft Association conspired to ruin his business and brought the suit under the Sherman anti-trust law for three times the actual amount of his alleged damages, which the Sherman law provides.

The court held, in dismissing the suit, that there was no contract or agreement entered into, as required by law, and that there was no violation of the Sherman act.

Green Island Plant Produces Ford Parts

Will Employ Farmer Help in Winter—Waterways There Will Be Developed

DETROIT, June 16—The Ford Motor Co. plant at Green Island is now in production on radiators and T-12 ring gears. The manufacture of other parts and equipment has been delayed by slow deliveries of machinery, but when this is installed, the company states that the plant will be second in production only to the Detroit plants. Expansion of the plant is to be in line with actual needs. In this connection the manufacture of springs will soon be started, adding 400 to the present force of 625 men.

The Green Island plant will be one of the first to feature the Ford principle of employing farmer help during the winter months, permitting them to work their farms during the summer months. The company is also contemplating an extensive program of improvement and development of the waterways of the section, including an all-water route to Detroit.

Commenting on the new plant, the company declares that it is significant of the part navigation and electrical power will play in the future program of expansion and development of th company. Quoting Henry Ford, it says, "Water power is the cheapest, the most efficient, the least wasteful of all types of power."

First Week of June Shows Big Schedules

(*Continued from page* 1348)

will be made in agricultural areas. The peak of the year in some of the more densely populated centers has been reached and the slight decline already noted will become more pronounced although it is not believed it will reach extraordinary proportions. Farm buying is expected to prove a big element in maintaining an even balance in country-wide business during the coming months.

Overseas demand is taking an increasingly large proportion of the output of American factories and manufacturers are looking with greater optimism toward foreign markets. For the first four months of the year consumption abroad of American made cars and trucks is estimated at 107,000, an increase of 50 per cent over the same period last year and representing 8.5 per cent of the output of factories in the United States and Canada and of Ford's foreign assembly plants. As natural to the season, the largest buyers are countries north of the Equator.

Steel Orders Await Changes in Models

Feel Effect of Uncertainty Usually Experienced at This Season of Year

PITTSBURGH, June 18—The steel industry just now in its relation to the automobile business is passing through that period, which steel men declare commonly occurs in June, of finding shipments to automobile manufacturers and makers of automobile parts held up due to the period of uncertainty that prevails prior to the announcement of new models.

This condition, which sometimes causes inconvenience to steel mills but which always is expected, is the logical result of the effort of automobile steel consumers not to have on hand a tonnage of steel which may not fit in with the new models. For the same reason makers of automobile parts are holding up steel shipments.

This condition likely will last the entire month of June or until the automobile makers are definitely committed to the changes they will effect in their new cars. Some of these changes will cause parts to vary but an inch or a fraction of an inch, but if there is a lengthening, it is evident that the old parts will not do.

Despite this precaution in holding up shipments, it is assumed by steel men that the customary changes in models by the automobile makers prove more or less costly to the manufacturer, for, notwithstanding all calculations, there either is a shortage of steel for the old cars manufactured up to the time the new model comes out, or there is found too much steel on hand for the old cars.

In some instances where a new car is put on the market as a substitute, there is a change in specification that holds up steel shipments from one month to six weeks.

From information obtained in steel circles here there will be a number of changes in models. Some of them are likely to be slight, but the fact that there is a change is of importance to the steel manufacturer.

More Than 5,000 Dodges Go to Customers Weekly

DETROIT, June 18—In a statement issued by Dodge Brothers on actual sales at retail, it is declared that June in all probability will be a larger month than any previous month in the year, all of which have been record breaking. Constantly climbing delivery records coupled with increasing production, the statement declares, lead the company to believe that the last six months of 1923, added to the record breaking first six months, will result in the greatest year in the history of its business.

Since April 1 deliveries to customers have averaged more than 5000 cars a week. Since Jan. 1 dealers consistently have broken all records for delivery of cars to customers. This is without taking into account sales in foreign countries. Materially increased production in 1923 has made this performance possible.

The statement declares the first quarter in 1923 exceeded in retail deliveries to customers any quarter in the history of the business. Following this, deliveries in April exceeded any month of the first quarter and delivery figures for each week of April exceeded the previous one, creating a new record week each time. May maintained the pace established in April, and June should be larger than May.

Weekly reports from dealers make the statement on deliveries possible, it is noted. Through the reports the company is presented with an accurate, detailed record of exact conditions in each sales territory. Calculations are based upon cars actually bought by the public, this the company declaring to be the only true indication of conditions.

INDUSTRIAL NOTES

Tri-city Malleable Casting Co. has been incorporated with $200,000 capital stock to take over the foundry at East Moline, Ill., recently purchased from the Moline Plow Co. It has issued 4000 shares of no par value. The incorporators include Frank S. Mangan, H. A. Smith and E. M. Richardson, Moline, Ill.; William G. Smith and Joseph Meitzler, Danville, Ill.; Otto Sehling, Santa Monica, Cal., and E. A. Biggs, Chicago.

Western Reserve Cotton Mills Co. is installing considerable new machinery and enlarging its plant, at Millen, Ga., in order to increase its present capacity. The company, which manufactures tire fabric only, will be be one of the largest plants of this kind in the South when the enlargement work is finished.

A. C. Spark Plug Co. of Flint, Mich. has awarded a contract for the construction of a four story reinforced concrete factory building, with a floor area of 54,840 sq. ft. The building will provide increased production facilities to meet the demand for AC plugs and speedometers. The building is to be ready for occupancy Oct. 1.

Oilgear Co. of Milwaukee has appointed as sales representatives for Oilgear products the Federal Machinery Sales Co., Chicago; Laughlin-Barney Machinery Co., Pittsburgh, and the Elliott & Stephens Machinery Co. of St. Louis.

American Metal Parts Manufacturing Co., Milwaukee, specializing in the production of automobile bumpers and other automotive equipment, has filed a voluntary petition in bankruptcy, giving its liabilities as $48,673 and claiming nominal assets of $97,631.

Liberty Vulcanizer Manufacturing Co., Milwaukee, has awarded contracts for the erection of a factory to be ready about Aug. 1.

MEELEY TIRE BUYS PLANT

PASSAIC, N. J., June 19—The Meeley Tire & Rubber Co., newly organized, has bought the plant of the Armstrong Rubber Co., which has been vacant since the latter company moved to New Haven, Conn.

METAL MARKETS

Producers find comfort in the volume of specifications and contracts that came to steel mills during the first half of June. It all depends what forms the basis of comparison whether first-half June business is put down as satisfactory or not. Compared with the second half of May, there was a general improvement in the demand. Moreover, June generally ushers in the period of extreme midsummer dullness, and some of the mills have fared better in the last few weeks in the matter of new contracts and specifications than they had expected.

Very few of the specifications received are for steel not actually needed by the consumers, who long ago ceased anticipating their wants to the extent of furnishing specifications a long time ahead so as to obviate the risk of their competitors preempting the available tonnages. From the manner in which specifications came in during June it is inferred by many of the independent steel producers that July will not be the dull month that it usually is, and it is an old-time notion in the steel industry that when June and July make a fairly decent showing, the fall of the year is certain to develop a steadily broadening demand.

So much for the arguments of many of the producers who see in the prevailing conditions much that is encouraging, some of the more optimistic ones even going so far as to claim visions of another pronounced buying movement. Very little of the new business that has been placed has been of an automotive character. It is for the most part made up of the requirements of miscellaneous industries which refrained from entering the market while the pressure on mills was such that prices would have been against them.

Specifications emanating from the automotive industries have been proportionate to the tonnages still due to buyers on contracts, but they showed that consumers are more anxious to clean up old commitments in an orderly manner than actual need of steel. From the buyer's point of view the all-overshadowing indication that the market has definitely turned in his favor, has been the utter absence of all semblance of a pronounced tone in so far as values are concerned. Prices are certainly not strong. To call them steady would be to convey a false impression. They are in vogue for what little business is passing, for want of a set of values more expressive of the actual situation. They are a stop-gap affair. Buyers are not sufficiently concerned about steel to come forward and propose modifications, and sellers see no reason why they should make downward revisions when lower prices would hardly serve to bring out any representative business at this time.

Pig Iron.—Buying of foundry and malleable iron by automotive foundries is of negligible proportions

Aluminum.—Prices in all departments of the aluminum market are well maintained. The automotive demand is very light for the time being, but at that no lighter than the supplies. The domestic producer has the situation well in hand, and importers are merely bent upon marketing at the most propitious periods what limited quantities they can obtain from abroad.

Copper.—Domestic consumers have again turned apathetic and the market is drooping. Consuming demand for wrought copper and brass products, however, is fairly well maintained, the chief interest having on its books on June 1 orders with specifications attached aggregating 80,000,000 pounds.

Calendar

SHOWS

Nov. 4-10—New York, First Automobile Exposition of the Foreign Automotive Association, Hotel Astor.

FOREIGN SHOWS

Oct. 4-14—Paris, Passenger Cars, Bicycles, Motorcycles and Accessories, Grand Palais.

Oct. 15-20—London, Motorcycle Show, Olympia.

Oct. 24-Nov. 2—Paris, Trucks, Agricultural Tractors, etc., Grand Palais.

Nov. 1-15—Buenos Aires, Annual Automobile Exposition, under the direction of the Automovil Club Argentino.

Nov. 2-10—London, Automobile Show, Olympia.

Nov. 22-Dec. 1—London, Motor Transport Exhibition.

RACES

July 2—Tours, French Grand Prix 500-mile race.

Sept. 3—Annual Pikes Peak Hill Climb.

Oct. 28—Barcelona, Spain, Grand Prix for vehicles of 1500 c.c.; Nov. 1, International Grand Prix for cycle cars of 1100—Nov. 4, International Grand Prix for two liter.

CONVENTIONS

June 26-27—Detroit, Annual Convention of Automobile Body Builders Association.

Oct. 24-26—Cleveland, Thirtieth Annual Convention of the National Association of Farm Equipment Manufacturers, Hotel Statler.

Nov. 12-17—Chicago, Annual Business Exhibit and Convention of the Automotive Equipment Association, Coliseum.

S. A. E. MEETINGS

Oct. 25-26—Production Meeting of the S. A. E.—Cleveland.

Jan. 1924—Annual Meeting of the S. A. E.—Detroit.

MEETINGS

June 25-July 1—Dixville Notch, N. H., Summer Meeting of the Automotive Equipment Association

Sept. 19—Boston, Fall Meeting of the Motor and Accessory Manufacturers Association.

French May Advance Prices of Gasoline

PARIS, June 10 (*by mail*)—French gasoline costs, already exceedingly high, are certain to take an upward jump on Oct. 1 of this year, when the Government plan of mixing 10 per cent alcohol with all gasoline sold to the public will go into effect.

The decree just issued states that the State alcohol, which importers are obliged to take up and mix with all automobile fuel sold to the public, will be charged 120 francs per hectolitre when 99.4 deprees at a temperature of 15 deg. C.; 110 francs when at 94 deg., and 105 francs for 90 deg. alcohol.

These prices are higher than prevailing prices for gasoline, which is now being retailed at 83 to 84 francs per hectolitre, for high grade gas. It is obvious, therefore, that with this 10 per cent mixture French motorists must pay more for the doubtful privilege of using up the Government's immense stocks of alcohol. The above alcohol prices are fixed for a period of one year, but are liable to change on Oct. 1, 1924.

It is possible to enforce this measure by reason of the fact that gasoline can only be imported into France by Government license.

American Cars Entered in Monza Speedway Race

PARIS, June 10 (*by mail*)—America promises to be well represented in the First European Grand Prix, a 500-mile automobile race on Monza Speedway, near Milan, Italy, Sept. 9. Count Zborowski, Polish nobleman and American citizen, has purchased a 122-inch Miller and will drive it in this race.

Martin Alzaga has purchased two Miller cars for this event, one of which he will drive himself, and the other he will intrust to Jimmy Murphy. A fourth American car is a Frontyford, to be handled by Raoul Riganti.

This race, which owes its initiative to the united automobile clubs of Europe, has 500,000 liras in cash prizes, and will be run annually in the country of the winner on the previous year.

Indications are that the European Grand Prix will be the most international race of the year, for the American contenders will have to meet a strong Italian team, comprising three Fiat cars, Mercedes and Benz from Germany, Bugatti, Rolland-Pilain and Delage from France, and probably Sunbeam from England.

The Monza track, which is a few miles outside Milan, resembles the Indianapolis Speedway in many respects.

Durango-Mazatlan Road in Mexico to Be Built

DURANGO, MEXICO, June 15 (*by mail*)—Assurances are given by the governors of the States of Durango and Sina Loa that construction of an automobile highway between Durango and Mazatlan on the Pacific Coast will be started soon.

It is stated that besides the $100,000 which has been appropriated jointly by the two States for the proposed road private subscriptions amounting to more than $400,000 have been made in aid of the project. An appropriation by the Federal Government is also promised.

It will be the most scenic highway in Mexico for the reason that it will pass through the higher altitudes of the Sierra Madres and drop down to sea level. The route from Durango to Mazatlan will follow the railroad to its terminal at El Salto and thence over the Sierra Madre range to the Pacific Coast, following the old Federal trail and telegraph line. It will be graded for heavy truck, as well as automobile travel.

It will traverse fertile valleys which are devoted to agriculture and stock raising, and cross high mountains covered with heavy, valuable timber, and impregnated with fabulously rich metals. The whole route abounds in beautiful scenery.

FORD'S GLASS OUTPUT GREATER

DETROIT, June 16—Ford Motor Co. has increased the capacity of its Glassmere glass plant by the installation of new equipment. The factory will have capacity for about 7,000,000 sq. ft. annually, approximately one-third the requirements of the company.

Georgia Will Make High Mark in Sales

ATLANTA, June 20—That automobile sales in Georgia, including new passenger cars and trucks only, will be larger during the first six months of 1923 than they have ever been in a similar period, is indicated by a report from the State Vehicle Department that license fees during the period will well exceed $1,000,000, the biggest half year record in the state's history. Officials of the department are confident the year's record will be well above $2,000,000.

The largest previous record in the number of passenger cars registered in the state was slightly more than 140,000, but that mark is practically certain to be better this year, and officials are expecting a total registration of at least 165,000.

Total fee collections in 1922 were $1,831,274, and to date that mark has almost been equalled in 1923 collections. In 1921 the total was $1,702,103.

Atlanta distributors state that there has been but little abatement in sales the past two weeks.

L. G. Dodge Tours South

LANSING, MICH., June 18—Oldsmobile distributors in Montgomery and Birmingham, Ala., Richmond, Va., Greenville, S. C., Baltimore, Md., Washington, D. C., and Spartanburg, S. C., are building new sales and service stations or have just moved into new quarters, this activity being cited by L. G. Dodge, assistant sales manager, as an indication of the business boom developing in the South and the preparation of dealers to be ready for it.

Cotton will play a far less important role from this time on in the prosperity of the southeast, he says, owing to industrial development in that section. Factories are springing up everywhere, he states, and this will assure the South of a more constant income regardless of the condition of the cotton market. Inland southern States will still be mainly dependent on cotton, he says. The building operations among automobile dealers constitutes a boom in itself, Dodge declares.